No. 11. SEPTEMBER, 1866. 1s. 6d.

JOURNAL

OF

Social Science.

INCLUDING THE

SESSIONAL PAPERS

OF

THE NATIONAL ASSOCIATION

FOR

THE PROMOTION OF SOCIAL SCIENCE.

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PUBLISHED MONTHLY.

LONDON:

CHAPMAN AND HALL, 193, PICCADILLY,

AND ALL BOOKSELLERS.

C. WHITING] [LONDON.

TO CORRESPONDENTS.

Communications have been received from Professor W. Rushton; Mrs. M. A. Baines; J. J. Pope, Esq.; Dr. Buchanan; Miss Griffiths; Mrs. Knox; Miss Davis; B. Baker, Esq.

NOTICES.

NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

With which is united the Society for Promoting the Amendment of the Law.

1, ADAM STREET, ADELPHI, W.C.

THE TENTH ANNUAL MEETING OF THE ASSOCIATION

WILL BE HELD IN

MANCHESTER,

FROM THE 3RD TO THE 10TH OF OCTOBER NEXT.

Programmes, &c. of the Meeting will be forwarded to Members in due course.

*** Members are informed that notices of the Meetings of Departments are regularly printed on the back of the title-page of the "Journal of Social Science."

NOTES FOR A HISTORY OF SANITARY LEGISLATION IN ENGLAND.

By Edwin Lankester, M.D., F.R.S.

In England, although we find the medical profession organised in the form of the College of Physicians as early as 1518, we find little special sanitary legislation. The following notes from a journal distinguished for its advocacy of sanitary improvement are interesting:

"In the gradual accumulation of the codes necessary to civilisation, here and there a law points to an advance almost beyond the requirements of the time, and which subsequent ages have lost sight of in their daily practice, and have had to bear the consequences in disastrous blunders. For instance, we may cite a law made by Richard II., more than five hundred years ago, which set forth that a proclamation should be made in London and in other cities and towns, that none should cast 'any annoyance, dung, intrails, nor any other ordure, into the ditches, rivers, waters, and other places, within or near any city, borough, or town, or the suburbs thereof; and if any do he shall be called by writ before the chancellor, at his suit that will complain; and, if he be found guilty, he shall be punished after the discretion of the chancellor.'

"Notwithstanding this early and excellent act of legislation relating to the laws of sanitary science, at the present day a large majority of our towns deliberately dispose of all their refuse by depositing it in the nearest river. King Richard, despite his difficulties with Wat Tyler and the Percies, found opportunity to make this most useful provision, and it should have served for all time; but, unfortunately for ourselves as well as for the fishes, we have long since thrown the decree overboard; and, more than this, we are actually under the impression that social and sanitary sciences are inventions of the present day, and that the middle ages were devoid of both.

"A second sanitary decree, by which we have also failed to profit, was issued by that wise sovereign lady, Elizabeth, when she enacted that 'None shall erect or convert a building to be a cottage for habitation unless he lay four acres of freehold land of inheritance so near unto it that they may be conveniently occupied therewith; in pain to forfeit 10*l.* to the Queen for every such erection or conversion, and 40s. a month for the continuance.' Further, that 'No owner or occupier of any cottage shall place or willingly suffer any more families than one to cohabit therein; in pain to forfeit to the lord of the leet 10s. for every month he so continues them together.' In this last clause we have the question of the evil of overcrowding fearlessly grasped, calculated upon,

and provided against by penalties; and yet to this very day we crowd cottages together and crowd families in cottages. Queen Elizabeth was a wise princess, and perhaps recognised the importance of sanitary science; but, instead of availing ourselves of her legislation, we prefer to go on blundering with our fevers, choleras, and other plagues, to learn for ourselves. She also made a great point of the cleansing and scouring of ditches, and the keeping of the hedges and trees in order along the highways; and in one of her regulations entering upon these matters we may see an anticipatory injunction against the modern practice of collecting scavenage in heaps and letting it lie and rot, sometimes in the centres and sometimes in the suburbs of towns: 'None shall cast the scouring of his ditch into the highway and suffer it to lie there six months; in pain to forfeit 10d. for every load.'

"Still earlier precaution for the preservation of the public health was taken by Edward II., when he enacted that a butcher should not sell swine's flesh 'mezzeled,' or dead of the murrain. For the first offence in this particular the butcher was to be 'amercied;' for the second, to have the pillory; for the third, to be imprisoned and fined; for the fourth, to abjure the town. Henry VII. took up this same sanitary scent when he decreed that 'No butcher shall kill any flesh in his scalding-house, or within the walls of London; in pain to forfeit for every ox so killed 12d., and for every other beast 8d., to be divided between the king and the prosecutor.' And more especially when he provided that this law was to extend to all other walled towns, Cambridge, Berwick, and Carlisle, only, excepted. For all this legislative wisdom, the slaughtering of cattle is, but with few exceptions, carried on, with apparent preference, in the narrowest alleys in the most crowded and central portions of the town. Looking over the early statutes we can see most significant proof of a perception of the vital importance of sanitary measures. Many regulations were instituted which represent a wise intelligence on the part of those who framed them. It would have been well if men in the intervening periods had not lost sight of these, and left to the present age the gigantic task of combating with the causes of preventible deaths.

"Henry VI. decreed that, in a given ten years, several persons should be sent as commissioners of sewers into all parts of the realm, to inquire into the state of the 'walls, ditches, banks, gutters, sewers, gotes, calcies, bridges, streams, and other defences by the coasts of the sea and marsh ground,' and to cause any of them that required to be so, to be 'corrected, repaired, and amended.' Henry VIII. extended this commission over an additional twenty years, and desired that the commissioners should take oath that they would execute the laws and ordinances according to their 'cunning, wit, and power, without favour, meed, dread, malice, or affection.' Edward VI. rendered the commission permanent."*

John Caius, a physician, who lived in the reign of Henry VIII., besides a history of the "Sweating Sickness," published some

* *The Builder*, January 4, 1862.

sound sanitary advice in a work entitled "A Counseile against the Sweat," in 1522. He recommended the removal of the causes of fever "in damnyng diches, auoiding carios, lettyng in opene aire, shunnyng euil mists, not openynge or stunynge euil brethyne-places, landynge muddy and rottynge grounds, burieng dede bodyes, keping canelles clene, sinkes and easyng-places sweat, remouing dongehills," and other wise sanitary precautions.

In the history of sanitary science in our own country, we must not overlook the writings of Lord Bacon, who, in his "Historia Vitæ et Mortis," not only gave a history of previous experience of the action of external agents upon life, but gave suggestions for statistical inquiries on this subject, which, as has been observed, were "minute enough for any modern statistical congress." He also complained, that in the prosecution of these researches in his day, of a "discontinuance of the ancient and serious diligence of Hypocrates."*

Passing on to the eighteenth century, we meet with the labours of Cook, Pringle, Howard, and Bland. They all distinguished themselves by introducing sanitary measures into the public departments of the State. Sir John Pringle, the eldest of this group of sanitary reformers, was born in 1707. He was educated at Edinburgh, and took his degree at Leyden in 1730. He became physician to the Earl of Stair, who commanded the allied armies of England and Austria, and, having received several military appointments, he devoted himself with great zeal and energy to the improvement of the barrack and hospital accommodation for soldiers. He was present at the battle of Dettingen, in 1743, and was shortly after appointed to be physician-general to the English forces in the Low Countries. It was through his exertions that in the early part of this campaign a convention was entered into between Lord Stair and Marshal Noailles for the mutual protection of the hospitals of both armies. He was a man of large observation and benevolence, and he improved the great opportunities he possessed in this campaign to observe the influence of climate, diet, heat, cold, cleanliness, intemperance, and other agents on the health of the soldier. He observed the symptoms that characterised the epidemics of camps and barracks, and did not confine himself, as has been too frequently the case with his successors, to the treatment of these diseases, but he gave great attention to the prevention of disease. His experience he embodied in his work on the "Diseases of the Army." This work has gone through seven editions, and is now a standard work on this subject both in this country and on the Continent of Europe, where it has

* Rumsey, Op. cit. p. 91.

been translated into the French, German, and Italian languages. One great recommendation of this work is the plain, straightforward manner in which it is written, free from medical technicalities, so that it has been used with success by the soldier as well as the medical man. General Melville states, that whilst Governor of the Friendly Islands he believes he was instrumental in saving the lives of seven hundred soldiers by having read Pringle's work. Sir John did not confine his sanitary operations to the army; he did what he could for the navy. He encouraged Captain Cook in his efforts in that direction. He also wrote upon the plague and hospital fevers, with a view to their prevention.

Captain James Cook was born in 1728, and has hardly less claims to be honoured by his countrymen as a sanitary reformer than as a circumnavigator. He rose by his own exertions from the position of an apprentice on board a coasting ship to be commander of three celebrated expeditions of discovery. In 1772, he started on his celebrated voyage round the world, which he accomplished in three years and eighteen days. He had on board one hundred and twelve officers and men, and he returned to Plymouth, from whence he had started, with the loss of only one man by disease, and that, as he emphatically observes, not scurvy. Even at this time, when the Government were indifferent, and the public more so, to the state of health of both army and navy, this result was startling. The description of life on board ship at this time, so graphically drawn by Smollett in his "Adventures of Roderick Random," is hardly an exaggeration, and every ship was a floating lazar-house. It became of interest, therefore, to know how Cook had effected this great result, and we find him giving a very modest account of the means he adopted to Sir John Pringle, who was then President of the Royal Society, and his communication was published in the "Philosophical Transactions" for 1776. The following is a summary of this paper: First, as to diet. He was supplied with malt, of which he made sweetwort, by boiling, and to which he attributes antiscorbutic virtues. The next article was sourkraut, which was served out to the sailors three times a week. Portable soup was also amongst the articles of food, and this was mixed with fresh vegetables as often as they could be obtained. Lemon-juice and orange-juice were also supplied occasionally to the sailors. Sugar was taken out instead of oil, for, according to the captain, the oil had a tendency to produce scurvy. Such was the diet, in addition to the ordinary ship's stores, and in it we see those elements which subsequently, in the hands of Blane, became the means of banishing scurvy from the navy of England.

But Cook did not confine his attention to diet alone. He attended to certain rules of living, which he carried out with the most anxious solicitude. Instead of allowing the sailors to serve watch on watch, as was the custom, he divided the crew into three watches, thus saving them much exposure and fatigue. He saw to the cleanliness of the hammocks as well as their dryness, taking care, by his own inspection, that they were kept in a healthy condition. One great point on which he dwells is the dryness of the ship. He had fires lighted below twice a week, in order to remove all dampness, and never allowed an offensive smell to remain on board. He says, "The least neglect occasions a putrid, offensive smell below, which nothing but fires will remove." At every place he could he took in fresh water, and never failed to get in a stock of fresh vegetables and meat. This paper is a text from almost every sentence of which a medical officer of health might preach a sermon. Such an admirable example as Cook set in this voyage could not fail to produce its effect. In 1783, Sir Gilbert Blane published his work on "The Diseases of Seamen;" and in 1795, when he was appointed head of the Navy Board, he succeeded in making it compulsory for every royal ship to take out lime or lemon-juice to be regularly administered to the sailors on board; from this time scurvy ceased to be a scourge to the navy.

Sir Gilbert Blane has claims to be regarded as a sanitary reformer, not only on the ground of his advocacy of the introduction of lemon-juice into the navy, but because of his labours generally on behalf of the public health. During the time he was at the head of the Navy Medical Board, he caused returns to be made by every surgeon in the service, and forwarded periodically to the Navy Board. From the examination of these returns he drew up several papers on the health of the navy, which were published in the Transactions of the Medico-Chirurgical Society.

We now turn to John Howard, the philanthropist. He was born in 1726, and having been accidentally in early life made a prisoner of war, had his attention drawn to the unhealthy condition of prisons in general. He visited all the prisons in England, and many on the Continent, and drew up a report, which was presented to the House of Commons in 1772. This was the commencement of prison reform in England. Shortly after the presentation of this report two Acts were passed—one for relieving acquitted prisoners from payment of fees, and the other for preserving the health of prisoners. He, however, still continued his labours, and in 1777 published his great work, "On the State of Prisons in England and Wales, with some Preliminary Observations, and an Account of some Foreign Prisons."

"As soon as it appeared," said Aikin, in his "Life of Howard," "the world was astonished at the mass of valuable materials accumulated by a private unaided individual, through a course of prodigious labour, and at the constant hazard of life, in consequence of the infectious diseases prevalent in the scenes of his inquiries. The cool good sense of his narrative, contrasted with that enthusiastic ardour which must have impelled him to his undertaking, were not less admired, and he was immediately regarded as one of the extraordinary characters of the age, and as the leader in all places of meliorating the condition of that wretched part of the community for whom he interested himself."

In this work he laid bare the terrible results of a neglect of the laws of life in the treatment of prisoners. He dwelt especially on the prevalence of gaol fever, and although he imperfectly apprehended its real nature and proximate cause, he saw clearly the methods by which it could be removed. He laid down the "general heads" of a plan for regulating the government of penitentiaries, prisons, and houses of correction. Under the heads of fresh air, cleanliness, diet, clothing, lodging, firing, rewards, punishment, treatment of the sick, and burial of the dead, we find all the great principles of sanitary activity recognised. So great has been the influence of the labours and works of Howard, that the sanitary discipline of our gaols and prisons is at the present day, though not without some exceptions, far ahead of our general public sanitary arrangements.

The history of sanitary activity in the eighteenth century would be incomplete without reference to the great discovery of Jenner. It was in 1780 that the idea first struck him that it might be possible to propagate the cow-pox so as to render those who had it free from the attacks of small-pox. It was not, however, till 1796 that he made the decisive experiment. On the 14th of May of that year, a boy aged eight years was vaccinated with lymph taken from the hands of a milk-maid. The boy took the disease favourably, and on the 1st of July following, he was inoculated for small-pox without the slightest effect. The same experiment was several times repeated, and in 1798 he published his first memoir on the subject of vaccination, entitled "An Enquiry into the Causes and Effects of the Variola Vaccine." Although the practice of vaccination at first met with great opposition, Jenner lived to see it triumphantly established as a means of preventing small-pox, and adopted by every civilised country in the world.

The subject of vaccination may fitly introduce the subject of sanitary legislation in the nineteenth century. In 1802 the

Legislature of Great Britain voted a sum of 10,000*l.* as a reward for Jenner's services, and in 1807 he received a further grant of 20,000*l.* This was a high public recognition of the claims of preventive medicine on the consideration of the Legislature. In 1809, an Act was passed establishing the National Vaccine Institution, the functions of which body were to investigate the limits to which the protective influence of vaccination extended, and practically to assist in the introduction of its benefits throughout the country. In order to do this, a board of eminent physicians and surgeons were appointed, with salaries, a central office was established in the metropolis, where vaccination was practised on an extensive scale, and which served as a depôt from whence vaccine lymph was promptly and gratuitously applied to all parts of the empire. Under the direction of this institution, public vaccinators were appointed in London and the suburban districts, and were required to vaccinate gratuitously all persons who applied, in order to keep up a supply of the lymph. In 1833 a committee of the House of Commons was appointed "to inquire into and report on the expediency of continuing the National Vaccine Institution." This committee recommended a reduction of the Board and an economy in the expenditure of the institution. It still continues to perform the duties of vaccination and the distribution of the lymph thus obtained. Although the duties of this institution, as directed by the Government, were efficiently performed, it appeared in 1838, the amount of deaths from small-pox in England and Wales amounted to above 16,000, of which 3800 occurred in London. This led to great anxiety and inquiry in the country, and in 1840 an Act was passed, entitled "An Act to extend the practice of Vaccination." This Act gave power to the boards of guardians to contract with their medical officers or other practitioners for the gratuitous vaccination of all persons resident in their respective unions or parishes, the expense being defrayed out of the poor-rates. Inoculation for the small-pox was also made an offence punishable by imprisonment. Small-pox, however, still continued to prevail, and the "Vaccination Extension Act" was passed in 1853, by which it was enacted that every child, born after August 1, 1853, should be taken to the district vaccinator within three months, unless previously vaccinated and certified by some duly qualified practitioner. Those who failed to comply with this requirement, or to furnish a certificate of vaccination by a private practitioner, were subject to a penalty of twenty shillings.

All who performed vaccination, whether public or private, were directed to give certificates of successful vaccination to the

parents and the Registrar of Births. The Registrar-General was to provide books, forms, and regulations for carrying the Act into effect.

In 1859 an epidemic of small-pox spread throughout the country, and in that year there were 1156 deaths from this disease in London, and in 1861 there were 870. In the year 1861 a further improvement of the Vaccination Extension Act was sanctioned by the Legislature, and a short Act was passed entitled, "An Act to facilitate Proceedings before Justices, under the Acts relating to Vaccination." This Act contains the following clause :—

"The guardians of any union or parish, or the overseers of any parish where the relief to the poor is not administered by guardians, may appoint some person to institute and conduct proceedings for the purpose of enforcing obedience to the said Acts or any of them within their union or parish; and as to all expenses incurred by any person so appointed, or by any registrar of births and deaths, or by any medical officer of health appointed under an Act of Parliament, in proceedings for enforcing penalties under the said Acts or any of them, if the justices or court before whom such proceedings are had, certify that such expenses ought to be allowed, such court or justices shall ascertain the amount thereof, and such amount shall be payable out of the rates for the relief of the poor of the parish where the person for the time being dwells in respect of whose default or offence the same were instituted; and the court or justices shall ascertain the amount of such expenses. And proceedings for enforcing penalties under any of the said Acts, on account of neglect to have a child vaccinated, may be taken at any time during which the parent or guardian is in default."

A Bill was brought into Parliament during the last session (1866), but with other useful measures was abandoned.

One of the most important steps towards supplying data for the application of sanitary measures in this country, was the passing of the Registration Act in 1837. Previous to this time parish registers and mortuary registers were kept, but no attempt was made to generalise the facts thus registered. Parish registers were not kept in this country till the reign of Henry VIII. in 1538, when injunctions were issued by Cromwell, Henry's secretary, that every clergyman should keep a book wherein he should register every marriage, christening, or death. In 1694, in the reign of William III., a registration Act was passed for the purposes of revenue. The "Act for Registering Births, Deaths, and Marriages in England," came into operation on the 1st of July, 1837. By this Act a general registry office was provided in London, and the following general provisions were made. The annual abstract of the registers to be laid before

Parliament. A register office to be provided in each union by the guardians, and to be under the care of a superintendent-registrar. The register books to be provided by the Registrar-General for making entries of all births, deaths, and marriages in England. The registrars are authorised and required to inform themselves accurately of every birth and death which shall happen within their district. Parents and occupiers are required to give notice of births and deaths to registrars, and owners and coroners to do so in cases of foundlings and exposed dead bodies. Some person present at death, or occupier of house, to give particulars of death within eight days, and the registrar to make entries of the finding of coroners' inquests. The registrar to give certificate of death to undertaker, who shall deliver the same to the minister officiating at the grave. Superintendent-registrars are required to send certified copies of registrars to the general register office. The country is divided into registration districts according to the density of population, and in each union there is a superintendent-registrar. The registrar of births and deaths is appointed by the boards of guardians, and is always resident in the district in which he acts.

On August 7, 1854, an Act for assimilating the registration of birth and deaths in Scotland to that in England was passed. A registrar-general was appointed, and the returns are annually laid before Parliament. A registration Act was passed for Ireland in 1864. No better proof, perhaps, could be found of the value of these registration returns of death, than the little knowledge we possessed of the extent and causes of death in Ireland before the passing the Act in 1864, as compared with our knowledge of these subjects in England and Scotland. No sooner had the returns been regularly made than it was at once seen, that with regard to death, no better source of information with regard to the healthiness and unhealthiness of particular districts could be found. It was on these returns that all future sanitary legislation was founded. The success of this great national scheme of registration is in a great measure due to the admirable manner in which it was worked, and great credit is due to the present Registrar-General, Major-General Graham, and his indefatigable and profoundly scientific assistant, Dr. William Farr. The General Registering Office has not alone been satisfied with collecting and arranging the vast mass of facts which have been placed in their hands, but they have accompanied their annual and quarterly reports with remarks upon the health and mortality of the community, which have led to most important results. Dr. Farr's special reports have been written with a scientific accuracy and precision dependent on the multitude of his facts, and which combined with the force

and vivacity of his language, have given them an immense influence on the progress of sanitary reform. In one of his last reports, published in 1866, he has drawn attention to the necessity of further improvements, more especially in rendering the registration of births compulsory, the registration of still-born children, and requiring a more stringent medical certificate.

Recent sanitary legislation and public health Acts in England, may be more especially traced to the impression produced on the public mind by the advent of epidemic cholera in this country in 1831. When this fearful pestilence had swept over the country, and men had had time to reflect on its causes and consequences, it was clearly perceived that a relation existed between removable physical causes and this dire disease. Several philanthropic and active medical and public men deemed it a favourable opportunity of impressing on the Government the necessity of sanitary legislation.

On the 14th March, 1838, the Poor Law Commissioners presented to Lord John Russell an Appendix to their Fourth Annual Report, to which is added two supplements—one by Drs. Arnott and Kay, the other by the late Dr. Southwood Smith. These reports contain a vast amount of information, furnished principally by the medical officers of the various unions of the metropolis, upon the prevalence of certain physical causes of fever, sickness, and mortality to which the poor are particularly exposed, and which are capable of removal by proper sanitary regulations. In the Fifth Annual Report of the Poor Law Commissioner is added an Appendix (C) No. 2, written by Dr. Southwood Smith, which is a report on the prevalence of fever in twenty of the metropolitan unions during the year ending 20th March, 1838. It was the very great extent of the prevalence of typhus fever in the year 1838 that alarmed the public mind, and most probably was the cause of the valuable reports above alluded to. In May, 1838, Mr. Liddle wrote a letter to the Poor Law Commissioners, drawing attention to the prevalence of fever in the Whitechapel district, and to the wretched condition of the residences of the poor. These documents embodied a melancholy account of the sufferings of many of the working classes in London, from causes over which they themselves had but little control, but which are removable by legislative enactments. In August, 1838, Lord John Russell (then Secretary of State for the Home Department) addressed a letter to the Poor Law Board, desiring inquiry to be made as to the extent to which causes of disease stated in the appendices to the 4th and 5th of their annual reports, may be found to prevail among the labouring classes. In March, 1840, a select Com-

mittee of the House of Commons was appointed "to inquire into the circumstances affecting the health of the inhabitants of large towns and populous districts, with a view to improved sanitary regulations for their benefit." This committee, which sat between two and three months, examined upwards of forty witnesses from different towns in England, and in their report they state that sanitary regulations in many of the principal towns of the realm are most imperfect and neglected, and that hence result great evils, *suffering*, and expense to large bodies of the community." In July, 1843, the general report of the sanitary condition of the labouring population of Great Britain was laid before Parliament. This report was compiled by Mr. Chadwick, who was then Secretary of the Poor Law Commission. It was ordered to be printed by the House of Commons.

Shortly after the appearance of this work, a Commission was appointed by her Majesty to inquire into the present state of large towns and populous districts in England and Wales, with reference to "the causes of disease among the inhabitants; the best means of promoting and securing the public health, under the operation of the laws now in force, and the usages at present prevailing with regard to the drainage of lands; the erection, drainage, and ventilation of buildings; the supply of water," &c. The Commissioners issued their first report, consisting of two octavo volumes, containing a mass of evidence, obtained from the most competent witnesses, of the evils resulting from the want of drainage, neglect of house and street cleansing, ventilation, and imperfect supplies of water, and in the following year (1845) the Commissioners issued a second report, consisting also of two large octavo volumes, containing additional local reports, and their suggestions as to the best means of remedying the existing evils.

Shortly after the publication of the first two volumes of this report, the Marquis of Normanby moved in the House of Lords that an humble address be presented to her Majesty, to thank her Majesty for the report upon the state of large towns and populous districts, recently presented to this House by her Majesty's command, to assure her Majesty that they continue to feel a constant and active interest in the sanitary condition of the people; to express their earnest hope, that early in next session of Parliament her Majesty would be pleased to call the specific attention of Parliament to a subject of such paramount importance, and to recommend for adoption some practical measure of a comprehensive character, calculated to remedy evils of such acknowledged magnitude and proved extent. In

the year 1845, Lord Lincoln brought in a Bill to improve the sewerage and drainage of towns, founded principally on the report of the health of towns commissioners. The Marquis of Normanby also brought in a Bill for the better drainage of houses, and subsequently Lord Morpeth introduced his Health of Towns Bill. All of which Bills, owing to a powerful opposition, were withdrawn.

The Nuisances Removal Act was, however, passed, but was only a temporary measure, passed under the apprehension of a renewed visitation of cholera. This disease did not reach England till 1848, and then the Nuisances Removal Act became permanent.

It was in Lord Lincoln's Bill that a clause was inserted enabling local bodies to appoint a medical officer of health. In the sketch we have given of sanitary legislation, it will be seen that special officers, more especially medical men, have been appointed to perform the duties connected with the prevention of disease; there can be little doubt that sanitary measures can only be efficiently carried out by the aid of such an officer.

It was in 1848 that the first regularly constituted medical officer of health was appointed by the City of London, under the powers vested in the Corporation by the Act, which constituted the Commission of Sewers for the City of London. It was a great gain to sanitary science that a gentleman so fully qualified to perform its duties as Mr. Simon, was appointed to this office. In the admirable reports published by the City officer from 1848 to 1853, as long as he held the office, will be found an able digest of the sanitary work performed under his direction during that period, as well as a good example of the way in which such reports should be written in order to arrest the attention of the public.

Between the temporary and permanent passing of the Nuisances Removal Act, an Act of great importance, in a sanitary point of view, was passed, and this was the Baths and Washhouses Act. By this Act vestries and local boards were empowered to erect baths and wash-houses, and to obtain funds for this purpose from public rates and funds. The poor were by this means supplied with one of the greatest necessities of our large towns—water for washing purposes at a rate which enabled them to use it as extensively as their circumstances required. Upwards of twenty institutions of this kind have been established in London. The following table, drawn up for the use of the vestry of St. James's, Westminster, will give an idea of the extent to which these institutions have been employed, and the sums received for their use:

Table showing the Bathing and Washing at the Establishments in London, which are conducted under or in accordance with the Acts 9 *and* 10 *Vict., cap.* 74, *and* 10 *and* 11 *Vict., cap.* 61, *for the Year* 1858.

Number of Baths taken.	Number of times Women have availed themselves of the Wash-houses.	Name and Title of the Establishment.	Receipts from Bathers.	Receipts from Washers.	Gross Receipts.
			£	£	£
184,700	58,042	St. George and St. Giles, Bloomsbury	2,423 2 11	1,132 7 9	3,555 10 8
136,381	24,045	St. Marylebone	1,883 4 8	631 12 1½	2,514 16 9½
124,693	38,680	Goulston-square, Whitechapel	1,672 0 0	771 0 0	2,443 0 0
100,133	40,900	St. James, Westminster	1,150 1 10½	899 6 2½	2,049 8 1
90,471	24,577	St. Martin-in-the-Fields	1,507 8 8	434 17 1	1,942 5 9
89,524	27,063	Bermondsey	1,232 3 6	707 3 11½	1,939 7 5½
68,023	48,795	St. Margaret and St. John, Westminster	830 0 4	988 12 11	1,818 13 3
82,882	27,424	St. George, Hanover-square, Belgrave-place	1,069 13 0	738 7 10	1,808 0 10
81,943	22,503	St. George, Davies-street, Oxford-street	1,097 6 1	627 9 4	1,724 15 5
42,291	9,449	All-Saints, Poplar	504 11 4	333 6 8	837 18 0
1,001,041	321,474	Totals	13,369 12 4	7,264 3 10½	20,633 16 2

We may notice that the general conviction of the necessity of sanitary measures increased, and led to the introduction of powers for making provision for public health into Acts which otherwise might have passed without these provisions. Among the Consolidation Acts of 1847 was the Towns Improvement Clauses Act, many of the provisions of which have since been embodied in other Acts, and which contain a variety of clauses relating to the sanitary question. The great Act, however, which forms the most distinguishing feature of the sanitary legislation of England, was the Public Health Act, which was passed in 1848. By this Act a General Board of Health was constituted, at the head of which was a president appointed by the Government. Under this Act power was given to local authorities to construct public works of various kinds, but more especially for improving the drainage and water supply. Since the passing of this Act, between two and three hundred towns have placed themselves under its provisions. These towns contain populations varying from 500 to 200,000. These are exclusive of places which have put in force various sanitary regulations under powers given them by local acts. The expenditure upon the works thus executed has been calculated to be not less than 3,500,000*l.* Although this statement shows that a vast amount of sanitary activity has been called forth by the public health, it nevertheless gives but an imperfect idea of the indirect benefits which have resulted by the fixing public attention on the importance of the prevention of disease and death. The diminution of the

mortality consequent upon the introduction of sanitary improvements in some of the towns of England will be seen from the following table:—

Names of Towns.	Death Rate in 1000.		Number of Lives saved in 1000 per annum.
	Before Sanitary Measures.	After Sanitary Measures.	
Alnwick	35.2	28.3	6.9
Barnard Castle	33.3	25.9	7.4
Berwick	28.5	21.2	7.3
Bangor	35.1	30.9	4.2
Durham	26.0	22.7	3.3
Ely	25.6	19.3	6.3
Salisbury.	32.2	27.0	5.2
St. Thomas's	26.9	23.0	3.9

It must not, however, be supposed that anything like a perfect system of public sanitary exertion exists even in the improved towns; and a large number of small towns and villages exist where the prevalence of fever and the high mortality indicate that little or nothing has been done for the improvement of the public health.

After ten years of successful operation, the Public Health Act was repealed in 1858, and the General Board of Health abolished. This arose partly from the nature of its operations being misunderstood, and partly from the activity of the Board offending those who wished things to remain as they were, or wished to act for themselves. The Board of Health was really a board of works; and as they repudiated interfering actively in matters relating exclusively to hygienic arrangements, the name misled. The powers, however, granted under this Act are still continued by the operation of the Local Government Act, and are to be exercised by local bodies, and no cessation of the benefits of previous legislation is contemplated.

It was, however, considered necessary to give to some central body power to act in cases where disease reached a certain amount of fatality, or where fevers or other contagious diseases broke out with great violence; and a new "Public Health Act" was passed in 1858, which placed this power in the hands of the Privy Council. To this office is now given the power possessed by the General Board of Health under the Act of 1848 and subsequent Acts. This Act, which was originally passed for one year, was made permanent in 1859.

In 1855, the Nuisances Removal Acts of 1848 and 1849 were

repealed on account of their deficiencies, and a new Act, with the old title of "Nuisances Removal and Diseases Prevention Act," was passed. This Act, which is now in force, gives a general definition of "nuisances," which are embraced under four heads:

1. "Any premises in such a state as to be a nuisance, or injurious to health."

This comprehends all those causes of disease which may attach to the size, structure, or condition of the interior of dwelling-houses. It frequently happens that the houses or parts of houses inhabited by the poor, are, in point of size, altogether incommensurate with the demands of health for those who inhabit them. One of the greatest evils in our large towns is the tendency of the poorer classes to crowd together in small rooms. In London, the medical officers and magistrates have generally agreed that separate rooms in which a family dwells, should have at least 400 cubic feet for each individual. This is sometimes modified, and 500 cubic feet are required for adults, and 300 cubic feet for children. This regulation has acted most beneficially, and might be applied with great advantage in country districts where the poor in villages are often excessively overcrowded. Even where premises are of proper size, they are frequently so constructed as to prevent a due supply of fresh air, and thus become sources of disease. This clause gives to the medical officer or the sanitary inspector power to direct that proper openings should be made for ventilation. It often happens that there are windows in rooms which do not open at all, or if they open, only from a lower sash. Such windows can be directed to be changed in their construction, so that they will allow of a proper ventilation of the room. On the other hand, rooms may be so deficient in their structure, or so dilapidated, that the inhabitants are exposed to the action of both currents of air, and the access of water. Again, premises may become injurious to health by the accumulation of filth and dirt about them. Under these circumstances, orders may be issued for the cleansing such rooms. Under this clause the landlord is compelled to whitewash and cleanse the walls of areas, passages, staircases, and rooms which are in a filthy condition. A defective or impure supply of water rendering premises unhealthy, may also be regarded as a nuisance under this definition.

2. "Any pool, ditch, gutter, watercourse, privy, urinal, cesspool, drain, or ash-pit so foul to be a nuisance, or injurious to health."

This section comprehends all those arrangements generally placed outside or under the house, which are used for depositing or getting rid of the animal and vegetable refuse of the house. Wherever deposits of organic matter exist in ponds, pools, ditches,

or gutters near houses, they may give rise to malarious and other poisons which will injure the health of those who inhale them. The "privy," both in towns and villages, is often a foul and noisome depository, seldom emptied and never disinfected, which may constantly, by the permeation of its contents, give rise to diphtheria, typhoid fever, and other diseases. The public "urinal" is often so constructed as to be an offence to decency, and a source of disease from the noisome vapours given off from the decomposition of the urea and other organic products of the urine. "Cesspools" abound in every city and town in the kingdom, and, wherever they are near dwelling-places, they should be emptied and filled up. Their existence at all near houses where they are used must be regarded as a nuisance. "Drains" are injurious to health whenever the whole of their contents are not carried away. This is especially the case when they run under houses, and they are constantly exposed to dilapidation and the arrest of their contents when imperfectly constructed. The "ash-pit," or "dust-bin," is frequently the depository of animal and vegetable refuse, and require the same attention as drains, gutters, and ditches.

3. "Any animal so kept as to be a nuisance or injurious to health."

This section applies to the keeping of all domestic animals, in such a manner that their excretions are allowed to accumulate to an offensive or dangerous extent. Horses, cows, dogs, poultry, are the most common sources of nuisance, and may either be removed altogether when kept in improper places, or their owners may be compelled to adopt such measures as shall render them incapable of becoming sources of injury or disease.

4. "Any accumulation or deposit which is a nuisance injurious to health."

This section contemplates more especially those accumulations or deposits which are connected with businesses or manufactures, in which animal or vegetable matter becomes a refuse. In the Act, this section is accompanied with the proviso, that, should it appear to the satisfaction of the justices that the accumulation or deposit has not been kept longer than is necessary for the purposes of such business or manufacture, and that the best available means have been taken for protecting the public from injury to health thereby, that the parties producing the nuisance shall not be liable to proceedings.

Under this Act the local authorities can give notices for the removal of any nuisance; and if this is not attended to, a summons can be issued, and the offending parties brought before a magistrate. In certain cases also, where works are necessary to be done, the local bodies can do the work, and charge the person

on whose premises the nuisance has existed. The duties of a medical officer of health and of a sanitary officer are also recognised; and these officers have power given them to inspect premises in cases where they suspect a nuisance to exist. The medical officers of health and sanitary inspectors have also powers given them under this Act to inspect all articles of food exposed for sale which are suspected to be unfit for use as human food, and to seize the same, and bring the offender before the magistrate, who has power to inflict a fine upon the owner of the provisions thus seized.

A clause also, in the same Act, gives power to the sanitary officers to inspect the premises of persons carrying on offensive and noxious trades, and to point out the best means of preventing any injurious influence being exercised upon the neighbourhood, and of appealing to the magistrate if their suggestions are not carried into effect.

This Act also contemplates the suppression of the unhealthy practice of dwelling in cellars or kitchens, and defines the conditions on which any room under the ground shall be allowed to be let as a residence. This Act, though occasionally found too slow in its operations to remove an immediate and pressing cause of disease, has been found one of the most effectual of the various measures of English sanitary legislation for the permanent improvement of the health of towns. When it is considered that it deals with all those small causes of disease which are so constantly occurring in a civilised community, it is wonderful that its provisions are not more generally enforced. In any town or country district it would only be an act of benevolence on the part of the clergyman, the magistrate, the lawyer, or the medical man, to insist on its provisions being carried out in all cases where the manifest causes of disease exist.

Important as have been the results achieved by this legislation, it has been found, in many cases, entirely inoperative. The execution of these laws have been left in the hands of magistrates and vestries, who, themselves ignorant of the principles on which it has been founded, and sceptical of the good to be done, and certain of the expense, have turned a deaf ear to all applications for the enforcement of the provisions made in these Acts. There are towns in England, whose mortality is from 25 to 40 in the 1000 which might be immediately reduced to from 15 to 20 in the 1000, which steadily refuse to avail themselves of the provisions of the Public Health Act. The Nuisances Removal Act gives a ready power to magistrates in the country to scour our villages of the filth, and dirt, and sanitary neglect, which make them the ready prey of scrofula, typhus, and other contagious diseases; but this has not been done. Quickened once more by

the presence of cholera in our towns, our Legislature has, with a haste and rapidity which contrast strangely with its deliberations on less important matters, passed, in 1866, an Act, called "the Sanitary Act, 1866." The first part of this Act gives more power to the authorities called into action by the Sewage Utilisation Act of 1865. By these Acts greater powers are given to authorities to deal with the sewage of towns and the drainage of towns than had hitherto existed.

The second part of the Sanitary Act consists of an amendment of the Nuisances Removal Acts.

"19. The word 'nuisances' under the Nuisance Removal Acts shall include,

"1. Any house or part of a house so overcrowded as to be dangerous or prejudicial to the health of the inmates.

"2. Any factory, workshop, or workplace not already under the operation of any general Act for the regulation of factories or bakehouses, not kept in a cleanly state, or not ventilated in such a manner as to render harmless, as far as practicable, any gases, vapours, dust, or other impurities generated in the course of the work carried on therein that are a nuisance or injurious or dangerous to health, or so overcrowded while work is carried on as to be dangerous or prejudicial to the health of those employed therein.

"3. Any fireplace or furnace which does not, as far as practicable, consume the smoke arising from the combustible used in such fireplace or furnace, and is used within the district of a nuisance authority for working engines by steam, or in any mill, factory, dyehouse, brewery, bakehouse, or gaswork, or in any manufactory or trade process whatsoever.

"Any chimney (not being the chimney of a private dwelling-house) sending forth black smoke in such quantity as to be a nuisance."

The 28th clause is a valuable addition to our sanitary legislation, and enables persons to deal with a nuisance of a very painful kind:

"Any nuisance authority may provide a proper place (otherwise than at a workhouse or at a mortuary house as lastly hereinbefore provided for) for the reception of dead bodies for and during the time required to conduct any *post-mortem* examination ordered by the coroner of the district or other constituted authority, and may make such regulations as they may deem fit for the maintenance, support, and management of such place; and where any such place has been provided, any coroner or other constituted authority may order the removal of the body for carrying out such *post-mortem* examination and the re-removal of such body, such costs of removal and re-removal to be paid in the same manner and out of the same fund as the cost and fees for *post-mortem* examinations when ordered by the coroner."

The third part of this Act, entitled "Miscellaneous," gives powers to her Majesty's Secretary of State for the Home Depart-

ment of the most important kind. The interference on his part, however, depends on information. It is, however, to be hoped, in all cases of sanitary neglect, that individuals may be found with sufficient energy to complain to the Secretary of State. The 35th clause provides that any city or town containing not less than 5000 inhabitants, may be compelled by an order from the Secretary of State to make regulations for the following matters:

"1. For fixing the number of persons who may occupy a house or part of a house which is let in lodgings or occupied by members of more than one family.

"2. For the registration of houses thus let or occupied in lodgings.

"3. For the inspection of such houses, and the keeping the same in a cleanly and wholesome state.

"4. For enforcing therein the provision of privy accommodation and other appliances and means of cleanliness in proportion to the number of lodgings and occupiers, and the cleansing and ventilation of the common passages and staircases.

"5. For the cleansing and lime-whiting at stated times of such premises."

Such regulations to be enforced by penalties. The 49th clause also gives most important power to the Secretary of State:

"Where complaint is made to one of Her Majesty's principal Secretaries of State that a sewer authority or local board of health has made default in providing its district with sufficient sewers, or in the maintenance of existing sewers, or in providing its district with a supply of water in cases where danger arises to the health of the inhabitants from the insufficiency or unwholesomeness of the existing supply of water, and a proper supply can be got at a reasonable cost, or that a nuisance authority has made default in enforcing the provisions of the Nuisance Removal Acts, or that a Local Board has made default in enforcing the provisions of the Local Government Act, the said Secretary of State, if satisfied after due inquiry made by him that the authority has been guilty of the alleged default, shall make an order limiting a time for the performance of its duty in the matter of such complaint; and if such duty is not performed by the time limited in the order, the said Secretary of State shall appoint some person to perform the same, and shall by order direct that the expenses of performing the same, together with a reasonable remuneration to the person appointed for superintending such performance, and amounting to a sum specified in the order, together with the costs of the proceedings, shall be paid by the authority in default; and any order made for the payment of such costs and expenses may be removed into the Court of Queen's Bench, and be enforced in the same manner as if the same were an order of such court."

A fourth part adapts the application of the law to Ireland. There is no doubt that this Act gives greater powers to local

authorities, and more facility for proceeding, than previous Acts. It remains to be seen whether action will be taken under its clauses. What is really wanted in our country is an intelligent community to take an interest in matters relating to public health. Our present sanitary defects are all more or less traceable to the culpable practice of omitting from our systems of education an inculcation of a knowledge of those laws by which God governs the life and health of man. These laws have been ignored and trodden under foot alike by the so-called educated and refined as by the ignorant masses, and the consequences have been the dire judgments of the Almighty in the form of poverty, pestilence, and death.

BRIEF SANITARY NOTES FROM PRACTICAL EXPERIENCE, MORE ESPECIALLY IN REFERENCE TO CHOLERA.

By Assistant-Surgeon Joseph J. Pope, Medical Staff.

THAT epidemic cholera has once more visited our shores, and seized upon numerous victims, in spite of all the advancement we have made in sanitary and epidemiological knowledge, is now patent to any ordinary observer, and this fact should certainly incite us as a nation to act more resolutely, and to advocate strenuously not only a system of "State medicine," but also for an enlightened and progressive code of sanitary legislation. The interesting paper by Dr. Lankester, in a late number of the *Journal of Social Science*, so conclusively proves the advance that our Continental neighbours have made in these matters, and the lethargy which has characterised our own country (for, as far back as 1518, in Germany, a "medical officer of health" existed, and was considered a general benefit, and in 1350 there was a sanitary police in Paris), that we fail in feeling that astonishment which we should otherwise do at the opposition to, and disregard of, the opinions and advice of our present sanitarians by the local governments of the day. To any casual reader, the letter from the Rev. Harry Jones, in reference to the re-opening of the Broad-street pump and the consequent dissemination of poison amongst a numerous and susceptible population, would appear a mere historical incident; but, under existing circumstances, and looked at with our present amount of scientific and practical experience, it becomes a lamentable instance of warnings neglected, and an example of our obtuseness and imbecility. That incident alone should be

sufficient to point out how necessary it is that individual authority in matters of vital importance should disappear, and legislation of a certain and advanced nature rule in its place.

The questions by the Earl Fortescue, in the House of Lords, on Friday, August 3, touching sanitary reform in the army, were not without their importance; and although it must be admitted that the greatest advancement and the largest attention to these matters are visible in the present condition of the English soldier, it cannot be denied that much more is necessary, and that, unless energetic measures are adopted, our affairs will be far from a corresponding condition to those of our neighbours, who should not be able to excel us in sanitary arrangements.

The medical profession have struggled long to point out the benefits and advantages of a closer attention to these matters, and the Earl of Longford was perfectly just when he said that the Army Medical Department were "keeping pace with medical knowledge at home and abroad." The failing point has been the reception that has been given to the suggestions of sanitarians, and the inattention, supineness, and, in some instances, direct opposition that have characterised present authorities. Confer upon our advisers the power of action, and but little need would there be for complaint or unfavourable comparison with the condition of our Continental neighbours in sanitary matters. It is not our knowledge that is defective—it is the *executive* that fails in making use of the information possessed.

The presence of the epidemic of cholera amongst us is of such serious import, however, and comes so closely home to us, that it behoves every one to be up and stirring, and places any who have had experience of the character, cause, or treatment of the disease under an obligation to add their mite to the general fund of information on the subject. It is this feeling that leads the author of this short paper to place on record what he knows, and the observations he had the opportunity of making during a four years' residence in India, and from an acquaintance with the disease on more than one occasion.

The numerous articles and papers that have flooded the various periodicals within the past few weeks must have completely puzzled the general reader, and a more extraordinary collection of opposite views and opinions could hardly be found on one subject. This fact alone would prove how true it is that a satisfactory theory of the cause of cholera is still wanting. That it is produced by a *special* poison, ample evidence to my mind exists; for not only does it seem to establish for itself a locality, but it proceeds in its onward course independent of, though to some

degree associated with, certain influences. True it is that bad water, human intercourse, and foul air are the principal methods by which the disease travels, and conditions amongst which it increases and, as it were, ferments; but those who have seen the disorder "in its home," as Dr. Macpherson very pointedly puts it, will have recognised instances where no evident cause existed, and yet where the poison fixed upon one or more victims indiscriminately. The outbreak of cholera amongst the artillery at Mhow in May, 1864, comes to my mind as a case forcibly illustrating my meaning. Without any overcrowding or unusual condition of the men, two soldiers were seized within a few hours of each other at opposite sides of the room, separated by several other men, and having a direct current of air from open doors between them. Throughout the day, other cases occurred in the various portions of the barracks, but no more in the room where the outbreak first appeared. Again, the certain cessation that is always produced by moving away from the spot where the disease first appears marks its individuality and its localisation. The battery that was attacked with cholera at Baroda, in 1865, only marched out of the station for *three miles*, and not any fresh case was admitted to hospital after they left the cantonment. Further, it was curiously shown in the lamentable Mhow march how an entire district may be infected, and bound round with a line of demarcation. The farther the battery marched from Mhow, the more virulent became the epidemic; but when the road was retraversed, cases gradually diminished in number and severity, and within four miles of the seat of the original outbreak they ceased altogether. These facts, to my mind, point conclusively to not only the justice of the "special poison" theory, but also the truth of the preventive doctrine, and afford strong evidence of the possibility, nay, almost certainty, of regulating the appearance and spread of this epidemic by special sanitary regulations.

Cholera is essentially a disease of crowds, and this is now acknowledged, I believe, by all. In my short experience, I have seen half a dozen instances of the epidemic arising from the foolish pilgrimages that are still permitted in India, and the attention of the Government would be well bestowed in that direction. The freedom of religious thought is of course a glorious fact in our constitution, but when life is jeopardised by observances, carried out without any regard to science and known sanitary laws, it should be regulated, if not entirely suspended.

The question as to the communicability of the poison is one that raises many doubts, and forms a groundwork for discussions having important results on both sides. During the severe visit

of cholera to the native city of Indore, in 1864, I noticed that attacks of the disease were very unfrequent amongst the class of men and women whose duties brought them into immediate relation with the sick. The "*bhungies*," or caste whose work is cleansing and removing excreta merely, suffered but very little from attacks of the disease, and in more than one instance, when they received the poison, it seemed to be but in small quantity, and recoveries were numerous amongst them. As a class they are not cleanly, and being engaged in hourly and continued contact with what has always been considered the very poison itself—vomit and excreta—it is, to say the least, a curious fact tending somewhat to shake the doctrine of contagion.

Dr. Macpherson's remarks on the effect of season and climate, more especially in India, are remarkably true; and there can be no doubt but that rain in copious quantities cuts short the progress of the epidemic sooner than any other condition. This I would ascribe, however, rather to the general sanitary effect of a mass of water than to any special influence on the poison itself. During the life of the late Surgeon-Major Cameron, Royal Horse Artillery, I witnessed the effect of his energy and indefatigable zeal in this portion of sanitary reform. The barracks, hospital, and surrounding ground at Kirkee were rigidly cleansed and daily inspected, and the Doctor went into the surrounding country, and for a circle of eight or ten miles superintended the cleansing and clearing of the smaller villages. His efforts were well rewarded, for not a single death occurred in the regiment; and although around, cases of cholera were alarmingly numerous and fatal, the charmed circle of cleansed ground was not invaded, and the sanitary fortress effectually repelled the advances of this most dangerous enemy.

I know that the idea is held by some that cholera poison cannot continue its ravages if it exist in a moist state; decomposition rapidly ensuing, and the virulence of the disease is checked. To some extent this may be correct, and doubtless much of the malignancy of the Indian variety of the disorder is due to the dryness of the climate, which favours the dissemination of the poison-germ; but yet instances are not wanting where, even during the rainy season, the epidemic has continued, and it is only fair to admit that preventive sanitary measures, such as cleanliness and free circulation of air, are infinitely more certain than the mere dilution or alteration of the poison itself. Remove the *nidus*, and the poison will leave the locality. In no disorder have I seen such plain and satisfactory results from attention to sanitary matters as in epidemic cholera.

Sporadic cases of cholera are looked upon by the inhabitants of India as necessary and unavoidable, and frequently I have

seen their presence disregarded until they became so numerous as almost to constitute what is pleased to be called an "epidemic." I cannot see the difference between *sporadic* and *epidemic* disease, excepting in their intensity, and I can but believe that the latter is consequent in almost all instances on the remissness with which the former has been noticed. That local *atmospheric* influences have much to do with the virulence and appearance of the epidemic form of cholera, I have no reason to doubt, and perhaps there is no more valuable test in this way, that can easily be obtained, than the excess or diminution of "ozone" in the air. I am well aware that this point has suffered lately in its reliability, but my personal experience and experiments lead me to state, that a very distinct and unmistakeable diminution of *some* ingredient which affects the ordinary paper test for ozone has preceded in one case a severe outbreak, and in another a temporary appearance of cholera in India. Whether it can be looked upon as a mere coincidence or not, I am not prepared to argue for want of sufficient data, but this I observed as a fact. During a short residence at a hill station in 1865, which was always looked upon as free from cholera poison, I was particularly struck with the sudden and yet continued diminution of the effect of the atmosphere on the ordinary ozone test paper, and on the second or third day of its existence a case of true Asiatic cholera was reported, visited, and, unfortunately, ended fatally. As only one case came before me, I was loth to associate it with the condition of atmosphere I had noted.

Dr. Cook, who has, however, formed a report on the subject of "Ozone" for the Bombay Government, informed me, when I drew his attention to the fact I had just related, that he had frequently noticed the relation between an outbreak of cholera and this apparent deficiency of ozone. He said he was riding on one occasion away from the station of Ahmednuggur, having left his wife resident there, and he was struck by the slight influence the atmosphere was exerting on the portion of test paper he carried in his hat. So important did he consider this phenomenon that he sent a messenger to warn his wife, and to request her to leave the station. In three days cholera broke out with great virulence, and raged in and around the cantonment for some period. Mr. Glaisher has also stated that in the three visitations he has investigated there was a total absence of ozone. The value of these observations is of course more in the way of prevention than of treatment, though it naturally suggests the thought of trying the effect that would be produced by supplying the deficient principle through some of our present combinations, as, for instance, the "*permanganates.*"

Dr. Pettenkoffer, of Munich, many years ago endeavoured to

introduce this theory of "two factors for the perfection of the cholera poison," and from that time it has received supporters, and certainly occupies now the most important position. It is a very satisfactory belief that, however, pernicious and unwholesome the surroundings may be, cholera cannot be generated *per se;* but, on the other hand, it is well to remember that, although cholera poison may be present, with the exception of here and there a case, no epidemic character can be conferred upon the disease without a congenial residence and fermenting ground is provided. It becomes therefore a matter entirely under our own control, and we do not either individually or as a nation sufficiently realise the responsibility. To be a fatalist in connexion with this disease is to be ignorant of all scientific and practical truths in reference to it, and in no country can this be so painfully witnessed as in India. When the epidemic had raged some time in the native bazaar of Indore, means were adopted for isolating the cases, and measures suggested for remedying the overcrowding of the small unventilated houses of that country.

The disease was checked as certainly and as suddenly as these evils were removed, and it was hoped that no more cases would occur. A number of Brahmins of influential position were annoyed at being separated from their fellows, and formed a deputation to the Political Agent, who, in deference to their views, made an exception in their case. Within forty-eight hours of their return to their houses, cholera again appeared amongst them, and carried off the majority of those who had thus invited its company.

That water is one of the principal sources by which the poison is circulated and received into the system, the experiments of Dr. Snow, and the report on the Broad-street pump, which has been referred to lately, are ample and sufficient proof; but I would even go farther than most in this matter, for, from observation and experience, I am inclined to believe that the drinking of impure water, more especially if those impurities be organic, renders a person highly susceptible to the attack of the cholera poison, and the injury is independent of the presence of the poison itself, which may be communicated from entirely a different source, but, finding a suitable reception in the altered condition of the person who has been affected by the decomposing matter in the water, it produces its characteristic results. For this reason I would recommend constant supervision over the supplies of drinking water. It is not enough to merely purify for a time, or during the prevalence of an epidemic. The evil results are already present from the former use of the water. Should there be a well or spring that has been discovered to be

impure, it should be at once and *for ever* closed. The temporary removal of a pump-handle is not security enough; nothing short of total annihilation should be permitted. Whether cholera is associated with water or not, is not, after all, the main consideration. It is thoroughly established that certain impurities in water are detrimental to health, and that should be a sufficient ground for preventing its further use or supply.

The analysis of the river water which the inhabitants at Kirkee, and most of those in Poona, were being supplied with, gave a percentage alarmingly high, and even at the best time of the year showed the presence of 4.97 grains of organic matter in a gallon. There can be no surprise, therefore, that cholera found numerous constitutions ready to receive its poison, and fit in every way to augment its effect.

In looking at the sanitary points in connexion with cholera, it is well, I imagine, to divide them into collective and individual. For the one, society as a body is answerable; for the other, each person is accountable. Each division is equally important, and should be regulated by firm and just laws. It is a case in which the freedom of the individual must be sunk in the public good, and where the State can step in and assume the despot, with not only credit to itself, but lasting advantage to the people.

Intemperance and general habits of irregularity seemed to predispose men to the attacks of the disease. This I saw frequently to be the case, and in more instances than one a mental depression, either from fear or other nervous causes, ensured its appearance. The main points of sanitary interest are now, I believe, well known, and isolation of cases, extreme cleanliness, and thorough ventilation, will do much to check and stamp out the epidemic, more especially if united with individual efforts at hygienic reform.

Cholera is not a disease for *treatment* or *cure;* it is one that must be *prevented* and *stopped.* It is quite useless, from my observations, to attempt to influence any *patient* suffering from the disorder; like a fire that is rapidly spreading—attend to the surrounding property, and let not the water be wasted on the building itself. If once the premonitory stage, which, as Professor Maclean justly says, is *universally present,* is passed unnoticed or untreated, then, indeed, does it become a matter of mere constitutional strength and individual vigour. Often did I recal the observations Dr. Maclean made to the students in the Army Medical School, myself amongst the number,—"It is a disease in which nature wants *good support,* and not *vile goading.* In short, the best remedy for cholera is '*good nursing.*'"

Throughout my short Indian experience every description of

remedy came before me, and none were decisively successful. I recollect a brother assistant-surgeon telling me how very fortunate he had been with alkaline drinks and large doses of the strong solution of ammonia. Certainly his cases compared favourably with mine, and I was inclined to believe that much of his success was due to medicine. Another burst of the epidemic occurred, and his fatal results far outbalanced any previous experience. Then, indeed, had he to acknowledge that cholera was not to be tamed; it was merely to be chained forcibly down, and kept under by rigid hygienic measures. Each epidemic, and each case in the epidemic, presented some variety of symptom or effect, and generalisations, specifics, and wholesale remedies are myths, and highly dangerous doctrines and practice.

The remarks in the *Lancet* of August 4th are well worthy of notice and serious consideration. Drugs are indeed futile: "ill-regulated, haphazard treatment" cannot be too strongly condemned, and well may an intelligent profession "protest against the employment of measures which seem to be directed against disease as though it were a conscious enemy to be driven, washed, frightened, or poisoned out of the body."

I am aware that the pages of this periodical are, perhaps, not the exact place for such discussions; but I must beg to be allowed to bear my testimony to the soundness and thoroughly efficient character of the advice and treatment given and followed out by Professor Maclean. To those who feel an interest in such matters I would say—Read that physician's lectures published in the *Lancet*, and I am certain a more sensible or effectual course could not be recommended. From my own observation and truly practical experience, I would endorse all that he says.

But, in conclusion, this very difficulty in determining upon the right course for the treatment of cholera, only throws a greater responsibility upon those who recognise and advocate the *preventive* theory. An old proverb has it, "*that which can't be cured must be endured*," but such a fatal maxim as that cannot be too soon expunged from our philosophy.

Our medical officers of health have much more responsibility than they seem to recognise in their several appointments. Our Government has a duty to its people that cannot be too strongly insisted upon, and individuals are answerable, in many instances, for much of the present existence of epidemic disease.

I am not at all certain but that the prevalence of cholera, as with other preventible diseases, comes under the cognizance of the *coroners* appointed by Government to investigate the causes of death, and it has always struck me as an unwarrantable curtailment of this all-important and certainly pre-eminently useful office, that public and in some instances professional interference

and opposition have confined the coroners' duties to such a narrow limit. True it is that the law is on the side of the coroner in these matters; but there are obstacles in his way, and instead of that free and thorough investigation which to my mind should follow the appearance of any epidemic, we frequently find a desire to smother evidence and to conceal cases which would prove of the greatest public importance.

And this view of the duties of the coroners' court puts the appointment of a medical coroner as a *sine quâ non*. I feel that I must not, however, digress from the subject of sanitary arrangements, as being essentially necessary in the present period.

The united voice of so many of our educated and scientific men must have some influence on those in authority, and sooner or later the advantages to be derived from a regularly devised system of State medicine must be recognised. As time goes on, it will undoubtedly be acknowledged that a thorough sanitary legislation is as necessary to the well-being and physical health of mankind as an army is to our national position, or a police force to the maintenance of order and protection of property.

In futuribus, doubtless, there will be that attention paid to these subjects that they so well merit, and I can well imagine ere long that the Government and people of this enlightened country will recognise the advantages of hygienic reform, even to the appointment of a "Minister of Health," and the adoption of certain laws and special penalties.

Surely if for our relation with foreign powers, for our protection at home, and for our direction in war, we can see the necessity for a high Governmental official on matters so important and coming so closely into relation with our individual and daily life, we cannot much longer remain in ignorance of the fact, that a perfect organisation and distinct authority are urgently required. The subjects are too serious to be divided amongst existing authorities. Sanitary police and State medicine must form an independent portion of our Government. When such a happy result is attained, we may hope to see disease lessened, epidemics rare, mortality decreased, and general health and longevity re-established.

Every Englishman who values his home and his country should bestir himself to attain such a beneficial and advanced condition of affairs. Once let the full force of hygienic science be acknowledged, and a very different condition of individual and social existence must necessarily follow, to the present advantage of our own country and the ultimate blessing of surrounding nations.

THE LATE SIR CHARLES HASTINGS.

THERE are few men to whom Social Science is more indebted than to the late Sir Charles Hastings. Not only was he the founder of that great combination of medical men which has effected so much for the interests of the medical profession, and which is known as the British Medical Association, but to his influence upon his son, Mr. George W. Hastings, may be fairly traced the origin and development of that wider union of those who take an interest in the advancement of the social interests of mankind, and which has resulted in the establishment of the National Association for the Advancement of Social Science. It is seldom in the history of society that institutions exercising so important an influence on the thought and action of a country can be traced so clearly to individual action. Although Sir Charles Hastings had attained the venerable age of seventy-two, he has been removed from amongst us suddenly and unexpectedly, and few who were personally acquainted with him but must have felt that up to within the last few months he retained all the bodily activity and mental vigour that enabled him to exercise his remarkable influence over those with whom he came in contact. In 1864 he was President of the Health Department of the meeting of the Social Science Association at York, and delivered an address, which was distinguished at once for its eloquence, and the firm mental grasp of the great facts and principles involved in the question of public health. Till within a few weeks of his death, he exercised the functions of Treasurer and President of the Council of the British Medical Association with the same vigour and careful appreciation of all the details of these important offices which had characterised him in his earliest days, before he had yet impressed the medical profession that the society he had founded was of vital importance to their interest in the State. Those who knew him intimately, acted with him in the performance of these important duties, never saw that the influence of age was felt by their leader, and fondly hoped, if they thought of his years, that a longer span of life than ordinary would be granted to one whose objects in life were so evidently directed to the welfare of others. Nor was this hope without some foundation. Sir Charles Hastings was the son of a clergyman of the Established Church, who lived to the patriarchal age of one hundred years. At the time of the birth of Sir Charles, who was his second son, and

which took place at Ludlow, the 11th of January, 1794, he was rector of Bitterley, a village near to the latter place. His father having removed to Martley, Sir Charles received his early education at the grammar school of that place. In 1810 he became a pupil of a firm of eminent surgeons at Newport. He afterwards attended lectures in London, and in 1812, before receiving any medical diploma, was appointed House Surgeon to the County Infirmary at Worcester. Here he remained three years, availing himself of the means which a great hospital affords of becoming acquainted with disease, and it is recorded of him that he took every opportunity of studying morbid anatomy by making *post-mortem* examinations. In 1815 he entered as a student at the University of Edinburgh. In his career as a medical student, it is not so much his diligence as a clinical clerk, or as an attendant upon lectures, that his biographer has to chronicle, as the fact that when the microscope was unknown in Great Britain as an instrument of medical research, there was one mind that appreciated its importance, there was one energetic youth who dared to spend his nights and mornings in making observations by its aid, and that was young Hastings. This part of Sir Charles's career has not, we think, been sufficiently dwelt upon by his biographers. It is true that in after life, the demands of active practice, and the public spirit which led him to seek to influence the social and political position of his profession, prevented his pursuing his researches with the microscope; but in the history of the application of that instrument to physiological research, the name of Sir Charles Hastings must be indissolubly connected. His papers on the irritability of the capillary vessels, and on the nature of the force which produces their contractility, were the first that could claim to have discussed these subjects on the ground of observation. There had been theory enough on this subject in the university in which Hastings wrote, and men who never saw the capillaries accepted the proof of their existence on the testimony of Malpighi, and discussed their functions and their influence on the production of disease; but to him was due the merit of having first observed the structure and nature of capillary vessels, before attempting to construct any theory of their action on disease. It is not to be wondered at that his statement of facts were regarded as unimportant, and his deductions from them as chimeras. This is the way in which all discoveries have been met. In this instance young Hastings displayed the true spirit of the philosopher; he insisted on the truthfulness of his observations, and challenged those who opposed them to show their fallaciousness. Though alone in his employment of the microscope, his honesty and courage gained for him the esteem of his

fellow-students, and he was recognised as the best man of his year by being unanimously elected to the Presidency of the Medical Society. This post has long been recognised in Edinburgh as the most honourable to which the medical student can aspire, and is always conferred on one in whom his fellow-students have the greatest confidence.

Hastings's studentship at Edinburgh was not alone distinguished by his microscopical researches. He had been house surgeon at the Worcester Infirmary, and he soon became one of the physicians' clerks of the Edinburgh Infirmary; and at his suggestion, not without some "snubbing," important changes were made.

Edinburgh would not have maintained its reputation had it been insensible to the merits of a man like Hastings, and we accordingly find that, on the death of Dr. Gordon, in 1818, it was proposed that he should succeed the doctor in the chair of anatomy and physiology, vacated by his death. It is interesting to contemplate for a moment what might have been his career had he accepted this office. Very different, no doubt, not less influential on the minds of other men, but, on the whole, we think, not so useful as that which awaited him as the physician of a provincial infirmary. But here again we see the man carving for himself a great position out of materials of the most ungainly and unlikely kind. It is true he might have worked with the microscope, and gained for England some of the laurels which have been so profusely won by German pathologists, on fields of less extensive labour than those afforded by the Worcester Infirmary; but he had evidently other work to do. He was appointed physician to the Worcester Infirmary in 1818, and married, in 1823, the daughter of Dr. G. Woodyatt, of Worcester. His practice increased, and he became surrounded with a family. This was not enough to occupy his active mind. He felt that the provincial physician was isolated, that there was not enough stimulus to induce him to study and work at the science of his profession. So we find him, in 1828, editing the *Midland Medical and Surgical Reporter*, collecting for and contributing to, its pages valuable papers. This went on for three years, when commercial circumstances brought the *Reporter* to a close; but a much more important affair came into existence. The *Reporter* had failed, but it occurred to Dr. Hastings that an association of medical men in the provinces, of a friendly and scientific character, might succeed. The suggestion was adopted, and a general meeting of all favourable to this proposition was held at the Worcester Infirmary on the 19th of July, 1832. Here was founded the Provincial Medical and Surgical Association. Laws were laid down, Dr. Hastings

delivered an inaugural address, and a volume of transactions was published. This association grew; it was a want of the age. Provincial scientific men had felt the same want, and had founded it two years before the British Association for the Advancement of Science. The Provincial Medical Association took, however, its own form, and adapted itself to the wants of medical men. It left off publishing transactions, and published a journal. It became political, and demanded a Medical Reform Bill. It invaded London, which demanded a metropolitan branch. This branch became too much for the parent, and the result of its admission was the conversion of the Provincial into the British Medical Association. Only the members of the association know how turbulent has its onward progress been; but Sir Charles was always the pilot. Sometimes it seemed as if he must yield the helm; but when the war was fiercest amongst its members, the intelligence, the courage, the amiability of its founder, its first secretary, and afterwards its treasurer and president of Council, secured for him the respect of all, and he never lost his hold on the hearts of those who had joined the Association. Whilst thus guiding the great institution he had established, he took a wise care that its branches should work independently of his interference, so that the first meeting after his death, and the only one from which he had been absent since its foundation, was one of the most successful in its history, and a touching memorial of the sagacious and self-denying way in which he had directed its machinery.

It was through the influence of the British Medical Association that the Medical Reform Act was passed, and the present Medical Council for the government of the profession established. This question was not one of secondary interest to Sir Charles. He entered into it with his whole heart and soul, and the draft of this Bill, which was carried through the House of Commons by the Honourable William Cowper, was first drawn by his son, Mr. G. W. Hastings. The Act, as so many of our legislative measures are, was, after all, a compromise. It should, however, never be forgotten that it secured to the medical profession, an immunity from the torture and oppression of re-examination, and a right to every man who had secured a diploma or license by a satisfactory examination, to practise in any part of her Majesty's dominions. That it placed the power of electing the Medical Council in the hands of effete corporations, competing universities, and a jobbing government, was no part of the original scheme of legislation as proposed by Sir Charles Hastings. He was anxious to place the election of the Medical Council in the hands of the whole profession. He had no confidence in our existing medical corporations, and

never sought from them a diploma or license of any kind. Nor had any of these bodies throughout the United Kingdom, distinguished as he was, and honourable as it would have been to them, the grace to offer him honorarily their distinctions. He had, however, other honours. In the year 1850, he filled the office of President of the Association at Liverpool, and as a recognition of his merit in establishing the Association, the honour of knighthood was conferred upon him by her Majesty. The University of Oxford honoured itself by conferring upon him the title of D.C.L. Lord Lyttelton made him a deputy-lieutenant of the county in which he lived, and the Government nominated him one of the first members of the Medical Council. It would have been more creditable to Government influence in this Council had Sir Charles held the position till his death. Sir Charles was the only member of the Council that could be said to represent the British Medical Association, and through it the interests of the medical profession at large. The Medical Council, as at present constituted, represents the medical corporations and universities, who neither represent the interest of the public or the profession, and has thus brought the working of a great public measure of reform alike into disgrace with both.

We turn now to another phase of the many-sided activity of Sir Charles's life. The love of research, which had led him to spend all his leisure time with the microscope as his companion at Edinburgh, gave intense interest to the long journeys which his professional avocations compelled him to make through the beautiful county of Worcestershire. Malvern, with her upheaved Plutonic rocks, bounded on every side by strata full of the indications of past life; the rich flora of the varied strata, and the animal inhabitants of the beautiful Severn and the valleys through which it flowed, would have great attractions for the ordinary lover of nature; but for one in whom the spirit of research was uppermost, this district would have unnumbered attractions. The habit of observation, early acquired, soon led to the accumulation of materials, and in 1834 we find Sir Charles publishing his "Illustrations of the Natural History of Worcestershire." Before this work was published he had taken an active part in establishing a Worcestershire Natural History Society. The result of the founding of this society was the establishment of a Museum of Natural History, which has, from the time of its first origin to the present, been increasing in interest and in the value and number of its specimens ,till it has attained the position of one of the most important of our local museums of natural history. It is not enough to say that Sir Charles took an active interest in this society and its museum—he was its life and soul. He took the chair at its meetings;

he superintended those annual gatherings of the society, which were regarded with so much pleasure by the inhabitants of Worcester; his house was an open one on these occasions, and it was his personal influence that threw around the proceedings of this local society a great general and public interest. Around this great public institution grew up numbers of those naturalists' field clubs, which, by bringing men of similar scientific tastes together, have done so much to promote a taste for natural-history science, and a love for investigation of natural objects. Sir Charles had, above all men of his time, a genius for association, and wherever he went his influence was felt, and he has left behind him, in all directions that his tastes led him, the beneficial influence of a life devoted to the social amelioration and scientific advancement of his fellow-men.

Those who had the pleasure of a personal acquaintance with Sir Charles, have always been struck with the evenness of his temper, the urbanity of his manners, and the quiet and unceasing energy with which he went through the multifarious occupations of his life. These qualities were combined with a transparency and simplicity that, at first, almost deceived people as to his ability and power. It was only on a closer acquaintance that his habits of punctuality, his attention to a large correspondence, his performance of the duties of a large public and private practice, his minute observance of all the courtesies of private life, and his constant attendance on meetings of committees in distant towns and in the metropolis, revealed the power of the man, and the elements of a character truly great.

We trust Sir Charles will find a biographer who will give in detail the remarkable features of his life. Such a life must be of great interest to the younger members of the medical profession, showing them how, by industry and singleness of purpose, the highest honours of their profession may be gained at a comparatively early age. Such a life must be regarded with intense interest by the members of the medical profession practising in the provinces, showing what they may do for the elevation of their profession and the advancement of the interests of mankind. To all, the study of such a life must be of interest, as affording an example of grand results obtained by singleness of purpose and untiring zeal. Of few men can it be said more appropriately, "Their works do follow them."

THE ENFRANCHISEMENT OF FEMALE FREEHOLDERS AND HOUSEHOLDERS.

A PETITION was presented to Parliament on the 7th of June, which created much astonishment, some laughter, and some grave consideration. This was the petition:—

"The humble petition of the undersigned, showeth—

"That it having been expressly laid down by high authorities that the possession of property in this country carries with it the right to vote in the election of Representatives in Parliament, it is an evident anomaly that some holders of property are allowed to use this right, while others forming no less a constituent part of the nation, and equally qualified by law to hold property, are not able to exercise this privilege.

"That the participation of women in the Government is consistent with the principles of the British Constitution, inasmuch as women in these islands have always been held capable of sovereignty, and women are eligible for various public offices. Your petitioners, therefore, humbly pray your Honourable House to consider the expediency of providing for the representation of all householders, without distinction of sex, who possess such property or rental qualifications as your Honourable House may determine."

This petition was signed by 1499 women, including many names of weight sufficient alone to entitle them to be heard.

It has given rise to much discussion in many households, and articles have appeared in the *Spectator*, the *Saturday Review*, the *Law Times*, and other papers, some containing arguments for the prayer of the petition, and some against it. As I think the onus of proof lies within those who say women ought not to vote, I will proceed to consider the arguments I have heard and seen on that side of the question.

1st. The greater part of men and women, not thinking at all, are much disinclined to discuss at all, and would leave matters where they are, simply to avoid the trouble of weighing arguments and facing new ideas; usually they are content to say quietly, "Things are well enough as they are;" but if they are pressed hard they get angry, and pronounce women who petition for the suffrage simply unfeminine. But, after all, the greater part of mankind is not the part that moves and rules mankind, therefore we have little to say to those who continually assert,

"Women are very well as they are," "Women should be womanly," "Women never have had anything to do with politics, and, therefore, never will have."* It will be sufficient if I examine every argument which I have heard, which has any pretension to thoughtfulness. The first and commonest is—women should not vote, because they do not wish to vote. Certainly this is a capital reason why women should not have votes thrust upon them, and no one ever yet proposed compulsory registration. The statement, however, that women do not wish to vote, is a mere assertion, and may be answered by a counter assertion. Some women do want votes, which the petitions signed and now in course of signature go very largely to prove. Some women manifestly do; others, let it be admitted, do not. It is impossible to say positively which side has the majority, unless we could poll all the women in question; or, in other words, without resorting to the very measure which is under discussion, make registration possible, and we shall see how many care to avail themselves of the privilege.

2nd. But women have other duties; so have men. No citizen lives for his citizen's duties only, but he is a tradesman, a professional man, a family man, a club man—a thousand things as well as a voter. Of course these occupations sometimes interfere with a man's duties as a citizen, and when he cannot vote, he cannot. So with women; when they cannot vote, they cannot.

The proposition we are discussing is simply that of giving votes to all English people who are duly qualified. Practically, it concerns only widows and spinsters who have 40s. freeholds or other county qualifications, and for boroughs all those who occupy, as owners or tenants, houses of the value of 10*l.* a year.

Amongst those there are surely a great number whose time is not fully occupied—not even so much as that of men. Their duties in sick rooms and in caring for children leave them a sufficient margin of leisure for reading newspapers and studying the *pros* and *cons* of political and social questions. No one can seriously mean to affirm that widows and spinsters would find the mere act of voting once in several years arduous. One day, once in

* An Austrian landed proprietor is astonished that our lady-landed proprietors have not votes, for in Austria all females, whether of noble or citizen blood, if they possess the property qualification, have votes the same as males. Women also in their corporate character, as "Stifts damen" and nuns, have the franchise, too, if their revenues are derived from land.

In Sweden, the Reform Bill, passed December, 1865, gives the election of members of the Upper Chamber to municipal and county bodies called repectively "Stads full mäktige" and "Landstings man." In the election of these, women take part. In order to be an elector, a woman must be unmarried and have attained her majority (twenty-five years), or a widow, and she must be possessed of more than 400 ricksdalers riksmynt per annum (about 22*l.*) Members of the Lower Chamber are elected in a direct way, and women do not take part in these elections.

say three years, might surely be spared from domestic duties. If it is urged that it is not the time spent in voting that is in question, but the thought and the attention which are necessary for forming political opinions, I reply that women, as a rule, have more time for thought than men, their duties being of a less engrossing character, and that they do, as a fact, bestow much thought and attention on the questions which occupy the Legislature. Social matters occupy every day a larger space in the deliberations of Parliament, and on many of these questions women are led to think and judge in the fulfilment of those duties which as a matter of course devolve upon them in the ordinary business of English life. If there is one quality more than another which makes a nation great it is public spirit, and anything which can foster in men or women a hearty interest in the common well-being, has a strong argument in its favour. And we are certain by giving votes to duly qualified women we should do much to obtain in families, in homes, a healthy, lively interest in the general welfare. We want to make women feel that they are a part of the commonwealth, and have responsibilities, and that it is really important to all that each should have true opinions on the questions concerning the happiness of the nation. At present, the position of women is not such as to make them at all comprehend this.

3rd. Another opponent avers, "that women having political opinions, will cause disunion in families." This argument might be used against their having any opinions on any subject at all. Religious subjects, especially, are apt to rouse the passions, and cause more disunion than any political opinions.

It will be said, perhaps, that differences of opinion may exist without bringing on serious quarrels, so long as they are not carried out publicly in action. But religious differences must be shown publicly. A woman who takes upon her to change her religion—say, to go over from Protestantism to Romanism—proclaims her difference from her family in a public and often a very distressing manner. After all, is it essential that brothers, and sisters, and cousins shall all vote on the same side? For let me mention once again, we are not discussing the expediency of giving votes to wives.

We have passed the time when thought on moral and religious subjects was denied to women. Every one will think it ridiculous to allude to Mahommedan ideas; but, to be logical, we must allow all beings who are affirmed sane on religious and moral subjects, to carry their freedom and sanity of thought into the less difficult questions of sociology and politics. As for opinions causing disunion, let it be remembered that what is a possible cause of disunion is also a possible cause of deeply-founded

union. The more rational women become, the more union there will be in families; for nothing causes so much disunion as unreasonableness and frivolity.

4th. The argument, "that women are ignorant of politics," would have great force if it could be shown that the large mass of the existing voters are thoroughly well informed on political subjects, or even much better informed than the persons to whom it is proposed to give votes. Granted that women are ignorant of politics, so are many male 10*l.* householders. Their ideas are not always clear on political questions, and would probably be even more confused if they had not votes. Compare for a moment the disqualified males and the disqualified females. The first are nearly all of the working class, and the second include such women as Miss Burdett Coutts, the Dowager-Duchess of Sutherland, Harriet Martineau, Miss Yonge, Louisa Twining, Mary Carpenter, Florence Nightingale, &c.

Among those women who possess the qualification and have not votes, there is a large number of the educated class, for it is well known that the proportion of unmarried women among the rich is greater than among the poor. We shall know the exact number of women possessing the property and household qualification when the return ordered by Parliament has been made. In the meantime, the following calculation is suggestive. In the *London Court Guide*, which, of course, includes no houses below the value of 10*l.* a year, the number of householders whose names begin with A is 1149. Of these 205, that is, more than one-sixth are women, all of whom are, of course, either widows or unmarried women.

No mass of human beings will or can undertake the task of forming opinions on subjects over which they have no power, and on which they have no practical decision to make. It would by most persons be thought a complete waste of time. When women have votes, they will read with closer attention than heretofore the daily histories of our times, and talk to each other and to their fathers and brothers about social and political questions. They will become interested in a wider circle of ideas than heretofore, and where now they think and feel somewhat vaguely, they will form definite and decided opinions.

5th. A gentleman who thinks much about details, affirms "that polling-booths are not fit places for women." If this is true, we can only say that they ought to be; but, as a general rule, polling is now carried on in a most quiet and respectable manner. Those who visited the London and Westminster places of voting at the last election can corroborate my statement.

6th. One argument which I have heard against women having any votes or any voice in any public matter is, "that women are

useless to the State in defending it against enemies, and therefore have no right to a voice in its government."

This argument is best met by questions. Why, then, give votes to old men? to clergymen? to men engaged in peaceful occupations? The day is happily past when physical strength was the only quality valued in the commonwealth. Women perform services at home of a nature which are more likely to fit them for a voice in the government than are the avocations of a soldier.

If the world is to advance, and the reason and the social affections more and more to triumph over mere brute force, there is no question but that women will and must take a share in the government of the country. They cannot long be classed with children. There are, it is fair to state, a number of opponents who do not assert that, but who also vigorously deny to women the right of voting.

7th. I mean those who affirm dogmatically "that the function of women is different from that of men, and that their function is not politics." They do not say that things that have never been may never be; they admit that both men and women may change and do change, yet assert that there are grounds for believing rationally that what is to be desired in the future with regard to women, is that women should be more than ever separated from all that concerns the world, active life, politics, and public action. These men and women think the function of women as noble and high as that of man, but different; according to them, a woman may read and think as much as she likes, reason with those who act, but must not act publicly herself. They think her influence excellent as long as she is apart, unaffected by the passions brought into play in the struggle of man with man. They admit that men are swayed by evil influence, and see but dimly, their sight being clouded by their ambition, and believe that thinking women, having nothing to gain or lose in the outer world, have clearer and brighter visions of the truth.

Something like the above is the view of what ought to be women's functions taken by thinkers among whom there is the widest disagreement on all other points.

Now, we all know, that as the mothers of the race, women take a separate view of life, but with this separate view there is still the much broader common view which men and women as human beings take, or ought to take, of all things in heaven and earth. Now, what is to prove that the limits of the function of women do not admit of any public life? However important a woman may be either spiritually or physically to one of the other sex, it seems to me that the sum of her remaining activi-

ties to the world at large holds much the greatest proportion. She is a daughter to her mother, a sister to her sister, a mistress over her servants; she ought to be in the broadest sense of the word, a neighbour both to her equals and the poor. These are her obvious and undeniable duties, and within the limits of her admitted functions, I should think it desirable to add to these—duties to her parish and to the State. A woman who is valuable in all her relations, a woman of a large nature, will be more perfect as a wife and a mother, and not less.

If we contemplate women in the past and in different countries, in addition to their womanly part, we find them acting all sorts of different *rôles*. In some few places, they have had but one *rôle;* in many, they have had much more than one admitted function.

What was their *rôle* among the Jews and the Romans? What was it in the early Christian times, and in the history of the Christian churches? What is it in many African tribes? What is it amongst the Quakers? What is their *rôle* in the colliery districts, at the Courts of Victoria and the Tuileries? We could conjure up thousands of pictures of women. They have done and do all sorts of work, in all sorts of ways. Is there anything in the past history of the world which can justify us in asserting that they must and will do certain things in the future, and will not and cannot do certain other things? I do not think there is.

But to return to my argument, and supposing that there were enough data in the past to enable us to predict that women will never take sufficient interest in politics to induce even widows and spinsters to wish to vote once in several years, should we be justified in realising our own prediction, and forbidding by law what we declare to be impossible? If men believe, on observation and experience, that it is not a womanly function to vote, I respect such belief, and answer, "only the future can prove;" but what I do not respect is the strange want of toleration which makes men say, "you shall not do this or that." We do not wish to oblige women to anything—we only wish to see them left free, as men are, to exercise or not, to exercise as they themselves find suitable, political and other functions.

Women's position in the future may be, as M. Auguste Comte asserts, that of philosophers, and people to modify and not to govern. He even says women have a better claim to govern than philosophers. In the future, the whole organisation of society may be upon the basis of the Comtist idea. I do not believe it ever will be; but now we have to deal with the world as it is, and our proposition, by giving liberty and not imposing any func-

tions, will not prevent any future healthy development of society. I think it useful, in the governing of a country, that all classes, characters, and interests should be represented, and I should be very sorry to see a Parliament elected entirely by good voters, as described by a Comtist. "A good voter ought to be, to a certain degree, suspicious, cold, not over-strict, and, above all, a man of action."

8th. It is asserted that "women would lose the good influence which they now exercise in politics if they had votes, and therefore the franchise should not be extended to them." An opponent who takes this view says, "The influence on politics now exercised by women is very real as it is. It is not always wise. It is the great conservative element, it is true; but it is always more or less exercised in a moral aim, and when a wise and earnest woman gives her opinion on politics, it acts with the moral weight of one hundred votes. Men feel that it comes purely from the conscience. There is no trace of its being a mere party cry; it is free from the lower incidents of committee room and electioneering common-place."

Now, in answer to this argument, first of all, it is necessary to prove that women exercise this indirect influence, then to prove that this indirect influence is good, then to prove that the indirect good influence would be lost if they had direct influence, then to prove that the indirect influence is better than the direct influence which women would exercise. From my own observation, I should say that the women who have indirect influence on the men they know, by their wisdom and earnestness, would not lose that influence if they had votes. I think the educational advantage of citizenship to women so great that I should feel inclined to run the risk of sacrificing that subtle indirect influence to a wholesome feeling of responsibility, which would, I think, make women give their opinions less rashly and more thoughtfully than at present upon political subjects.

I cannot see why female voters should attain only the vices and weaknesses of male voters, and I think the opponents of female enfranchisement much exaggerate the evil influence of this function on men. On the whole, it is a good thing for men to have votes, and not a bad thing.

Women would not, I believe, share in the noise or partisanship of elections, and would impart decorum into electioneering transactions. The unanswerable argument to all the sentimental objections is that women themselves wish to have the real vote as well as the subtle influence. I think we in England are more likely to admit the grounds on which Austria, in 1861, gave votes to women, than America or any other country, because

we have the largest number of educated unmarried women. They have no husbands or sons to influence, and therefore desire naturally to have some political power.

To sum up the arguments. First, it is said, women do not want to vote. We answer, those who do not want to vote need not. Then it is said, they are incapacitated. We answer, those men and women who are incapable, cannot of course vote; but then the residuum of those who would if they could? Why, say our opponents, those who would vote if they could, must not:—

Because it would cause family quarrels.
Because women are ignorant of politics.
Because polling is unfit for women.
Because women do not defend the State.
Because their duties are different from those of men.
Because women would lose the good influence which they now exercise in politics.

These are really all the arguments which I have heard used against the proposition. If there are any others, I shall be much interested in hearing them. B.

REVIEWS.

THE FUTURE WATER SUPPLY OF LONDON.*

PERHAPS no time could be more appropriate for considering the question of a water supply for London than the present. There can be no question that London is dependent at the present moment for water on an uncertain and an impure source of supply. The three great sources are the Thames, the Lea, and the New River. With regard to the first, it is vain to expect that much more can be obtained from it than is at present supplied, and we have but to read the accounts recently published to show that the Thames is increasingly the depository of sewage from all the increasing towns and villages on its banks. Under these circumstances, it would be fatal to the health and welfare of the inhabitants of London to depend much longer on the supply from the Thames. With regard to the River Lea, the supply of water from it is very limited; and the facts with regard to the present outbreak of cholera in the East lead to a grave suspicion that its waters have been a means of spreading the contagion which has so recently desolated that district of London. The New River is only a very limited source of supply to London, and its water has never presented any greater amount of purity than the Thames.

Under these circumstances, it would be criminal for the local authorities and the Legislature to overlook the necessity for at once making provision for a supply of water to London of greater purity and of increased extent. We have already alluded to the plan of Mr. Bateman for bringing water from the sources of the Severn, and we have now to draw attention to the plan of the authors of the pamphlet above mentioned for taking a supply of water from the lakes of Cumberland and Westmoreland. We do not intend to pronounce an opinion on the superiority of either plan, but would draw attention to the fact, that there are waters in England which are now comparatively useless, which may be made available for the life and health of London. The plans for carrying out such a scheme are undoubtedly stupendous, but the calculations given by Mr. Bateman and Messrs. Hemans and Hassard show that they are not beyond the means of so vast a population as that of London. In estimating the cost of great sanitary works like these, it is too often forgotten that the increased health and strength of a population soon repay the cost of any outlay that may be made to obtain that health and strength. If the vestries of London and the corporations of the country would sit down and calculate the cost of disease and death, they would soon find that

* On the Future Water Supply of London. By George Willoughby Hemans, C.E., and Richard Hassard, C.E. London: Stanford.

no sums they could lay out on sanitary improvements would be too large for securing the benefits of long life and freedom from disease. From this point of view, enormous as the sums may appear which would be required to bring water to London from Wales or Westmoreland, the expense would soon be amply repaid by the increased production of a healthy and long-lived community. With these general remarks we earnestly commend to those interested in sanitary improvement this pamphlet by Messrs. Hemans and Hassard, feeling convinced that the sooner efforts are made to bring a fresh water supply to London, the better it will be for the future health of its inhabitants and the economy of its resources.

BRIEF NOTICES OF BOOKS AND PAPERS.

Vivisection, is it Necessary or Justifiable? Being Two Prize Essays, published by the Royal Society for the Prevention of Cruelty to Animals. London: Hardwicke, Piccadilly.

The cruelties practised by vivisectionists, especially in France, induced the Royal Society for Prevention of Cruelty to Animals to offer a prize for the best essay in answer to the question—"Is vivisection necessary or justifiable?" Thirty-two essays were sent in, and the prize was adjudged to Mr. Fleming. A second essay by Dr. Markham, also received a prize, and the two are now published. The great point of difference between these two essays is, that whilst Mr. Fleming condemns altogether the practice of vivisection, Dr. Markham thinks that in certain cases so much good may be derived by humanity, that vivisections to a limited extent are justifiable. Both the essays are, however, written in a thoughtful manner, and condemn unhesitatingly thoughtless experiments on animals which shall inflict upon them pain in any degree. There can be no doubt that the habitual infliction of pain on the lower animals must have a demoralising effect on those who practice it, and when it is considered that the lower animals have an organisation that makes them as susceptible of pain as man himself, there can be no more justification for inflicting upon them unnecessary pain than upon members of the human family. It should, however, be remembered, that the Creator has, as it were, placed the lower animals at the disposal of man for his benefit, and large numbers of them are fit and proper sources of food, and in order to use them for this purpose he must destroy them, and inflict whatever pain is necessary in this process. If it can be shown that a good equal to that which humanity derives from taking food is to be obtained by slaying animals, then we think man is justified in making the sacrifice. On this point we agree with Dr. Markham, and think he has given some very convincing instances of the importance of experiments on living animals, in order to arrive at important physiological laws. In admitting this principle, we feel that the limitations are so narrow, that the very fact of animal life being sacrificed in so limited a degree, would at once point out how largely the admitted customs of society tolerate the infliction of unnecessary pain on animals. We feel sure it is not the object of the Society for the Prevention of Cruelty to Animals to hold up vivisectionists alone for condemnation; but we cannot close our notice of these prize essays without referring to the wholesale slaughter of animals in these islands for mere amusement. Surely a regard for animal suffering ought long since to have put down the practice of fox hunting, and similar amusements. Society admits the necessity of killing animals for food, but surely this is no justification for making the killing of animals an amusement. Bull-baiting is one of the sports of the past, cock-fighting exists but amongst the lowest classes, but fox hunting still exists, and we can fear little can be said in favour of the practice of shooting edible birds and animals for amusement. If their eatableness, however, is supposed to condone the vice, we would still urge the unjustifiableness of shooting for mere amusement such harmless creatures as our small birds, sea fowl, and a host of other creatures that are sacrificed for mere sport.

A Dialogue on Marriage. London: F. PITMAN.

This little book refers to a delicate and important subject in connexion with married life, and young husbands may gain from it hints which may tend to make their homes more happy. It is written in a serious and earnest manner, and requires to be read in the same spirit.

CHOLERA.

Orders, Directions, and Regulations of the Privy Council under the Diseases Prevention Acts, and Memoranda by their Medical Officer, with the Particulars of the Treatment recommended by the Royal College of Physicians at the request of the Privy Council, and an Introductory Summary. By J. B. HUTCHINS, Esq., of the Medical Department of the Privy Council. London: Shaw and Sons.

This pamphlet contains a large quantity of very useful matter, as the title will at once indicate. All who are anxious to save themselves and their neighbours from the invasion of the present pestilence, should possess it. It should be recollected, that although the disease is at present on the decline in London, that, taught by the history of previous attacks, we cannot consider ourselves free from liability to future outbreaks. It is only by the utmost vigilance in watching individual cases of the disease, and preventing the spread of the poison, that we can expect to prevent its invading any of our towns and villages.

Eighth Report of the Medical Officer of the Privy Council, with Appendix. London: Spottiswoode.

This Report refers to various subjects in relation to public health, which have occupied the attention of her Majesty's Privy Council. Although public health does not occupy the attention in this country which its importance demands, there is hidden in the recesses of those offices constructed by the Privy Council, and little if at all known by the people of England, a Medical Department. Over this department, one of the most vigilant and active of our health officers, Mr. John Simon, presides, and every now and then a "Blue Book," such as the present, sees the light. It is full of interesting and important matter relating to public health; but what we wish more particularly to draw attention to now, are the Reports on Cholera. Two of these are most complete and distinctive documents. One is a report on the sources and development of the present outbreak of cholera in Europe. A more complete account of an epidemic, tracing the disease from its birthplace in Hindostan to Mecca, and from thence through Turkey to Europe, has seldom been published. Mr. Radcliffe has also given all the details of the small outburst of cholera which occurred at Theydon-Bois, Epping, last year. The other report is a detailed account of the outbreak of cholera at Southampton in September and October, 1865. The investigation of the facts of this outbreak was undertaken by Professor Parkes, of the Royal Military Hospital at Netley. No one could have been better fitted for the task, and this document, containing a large amount of valuable facts, cannot fail to be of the highest interest to those who are studying the nature of cholera.

On the Nature of Cholera; a Guide to Treatment. By W. SEDGWICK, M.R.C.S. London: Walton and Maberley.

Mr. Sedgwick is a thoughtful and interesting writer, but his treatment of cholera in this book is too theoretical for public interest. He believes that cholera is dependent on a diseased condition of the nervous system, and recommends bleeding as a remedy.

Directions for the Preservation of Health and the Prevention of the Spread of Catching in Infectious Diseases, and Precautions to be taken during the prevalence of Cholera. By Dr. LANKESTER. London: Ladies' Sanitary Association.

This pamphlet, published by the Ladies' Sanitary Association, is a reprint of a series of directions, written for the purpose of being distributed amongst the poor of St. James's, Westminster. They are sold at a low price, for the purpose of enabling those who are so disposed to circulate them gratuitously amongst the poor. We may add,

with regard to protecting them from cholera, that very little can be done for their protection, unless they know how to protect themselves.

Water, its Impurities and Purification by the London and General Water Purifying Company.

It is not, probably, generally known that there is a company in London that undertakes to fit up London cisterns with a filter which shall render all the water supplied free from organic impurities. At this season, when there is reason to fear that at any moment our sources of water supply may be contaminated with cholera poison, it becomes of the utmost importance for comfort and safety that our water should be submitted to a process of filtration through animal charcoal. Professor Frankland thinks the water companies might do this of their own accord. Whether the companies will think it necessary to go to the expense, is questionable; and, under these circumstances, we unhesitatingly recommend the filters put up by this company.

The Antidotal Treatment of Epidemic Cholera. By JOHN PARKIN, M.D. London: Churchill.

Dr. Parkin, after showing the utter inefficiency of all systems of treatment of cholera, recommends his own, which is powdered charcoal. Those who have no confidence in any other remedy may try this, and it is very probable, when they have done so, they will have as little confidence in this as any other remedy. It is very humiliating to see the medical profession vaunting their remedies, when, if they studied the disease on the large scale of its history throughout the world, they would see that one system of treatment is not more successful than another, and that the disease obeys laws of a far different kind and of a much wider nature than those which can be gathered from the treatment of a few cases in some local hospital, or in some small district of the earth's surface in which an individual medical man happen to be placed. The safest practitioner is evidently the man who, without any theory as to the nature of the disease, will strive to do his best for his patient, by treating special symptoms as they arise, and, eschewing potent drugs, direct the food and nursing of the patient.

Cholera Non-Contagious, and the Absurdity of Quarantine Restrictions demonstrated. By EDWIN HEARNE, M.B. Southampton: S. Gutch.

Whilst the outbreak of cholera at Southampton in 1865 has furnished, in the hands of Dr. Parkes, the most convincing proof of the contagiousness of that disease, Dr. Hearne issues his manifesto in opposition to those of the learned professor of Netley Hospital. We have not space to attempt a repetition of Dr. Hearne's views, were they more conclusive than they are. We can only express our surprise that any medical man, with the opportunities afforded by the literature of the present day, should have ventured on the terrible responsibility of pronouncing a disease not contagious, which not only carries in its whole history the proofs of its contagiousness, but which, when treated on any other theory, has invariably spread and produced wholesale destruction amongst human beings. Dr. Hearne has brought forward no facts to support any other theory, and for the sake of humanity we would say that, should ultimately any other origin for the spread of that disease be discovered, it would be a folly approaching madness to act on any other supposition. It is the theory of its contagiousness that is giving precision to our sanitary measures, and a principle of action to our medical visitors and inspectors; and it will, we hope, be seen, that by acting on this theory, the present epidemic will be less destructive than any which have hitherto appeared.

Cholera, What it Is, and How to prevent it. By EDWIN LANKESTER, M.D., F.R.S. London: Routledge.

This is a sixpenny book intended for general circulation, and is principally devoted to giving an account of the history and nature of cholera, with directions for the use of those sanitary agencies by which it may be prevented.

MONTHLY CHRONICLE.

Zymotic Diseases in London, in July.—The following table gives the number of zymotic diseases registered in London during the month of July :—

Small-pox	141
Measles	221
Scarlet-fever	135
Diphtheria	42
Whooping-cough	171
Typhus	169
Diarrhœa	822
Cholera	1282
	2983
Cholera and Diarrhœa	2104
Zymotic Diseases *minus* Diarrhœa and Cholera	879

As we anticipated in our last, a tremendous outbreak of cholera has visited London. This explosion has surprised no one but those who are ignorant of the laws which regulate the outbreak and dispersion of cholera epidemics. Our local authorities, our magistrates, our clergy, our wealthy inhabitants, our newspaper editors, have all been taken by surprise. They thought that passing Acts of Parliament, and appointing health officers and sanitary inspectors, were to keep off the cholera. They forgot that, unless Acts of Parliament were acted on, and that medical officers and sanitary inspectors were assisted in performing their duties instead of being obstructed, that all such measures were likely to deceive people and to lead to a false security, worse than no measures at all. Such has been really the case. The cases of diarrhœa and cholera, which reached in July the terrible number of nearly 3000 cases, occurred principally in the East end of London, in a district remarkable for its insalubrity and for the entire neglect of the sanitary condition of the inhabitants by the parochial authorities. This district is supplied with water from the River Lea, and there can be little doubt that the foul sources from which this river derives its water, have been the means of poisoning the inhabitants of the East. Not that all who partook of this water were equally predisposed; but it has been precisely amongst the most neglected of the inhabitants of this district that cholera has occurred. It is here that the beneficent effects of the main drainage scheme for London have not been felt, because this portion of London has not yet had its drainage completed. It is in this district that the medical officers of health have

had least influence, and in which the fewest sanitary inspectors have been appointed. It is true that the moment the disease was announced and assistance for the sick needed, that the benevolent wealthy of London contributed their thousands, and with injudicious zeal supplied articles of food which, to say the least of many of them, were of doubtful value. All this is very pleasing; but why will not our benevolent friends think of these things before they come? Here in London have been at least a half hundred medical officers of health, ding-donging their reports of the nastinesses with which the benevolent wealthy were surrounded. They have prophesied cholera with no bated breath; they had studied the laws by which Heaven directs the destinies of men, and again and again did they assert, that, unless something was done to resist the state of filth and uncleanliness to which the people were exposed, that cholera must come. But the prophet, as of old, was regarded as a fool, and the wise man was accounted mad, and so the cholera has come to London, and to the end of July had killed nearly 3000 persons! From the 28th of July to the 4th of August, it killed 1407 persons; from the 4th to the 11th of August, it killed but 1045 persons, and the weekly reports since show a still further decrease, and the "dirty party" on our local boards are now trying to creep out of the darkness into which they retired whilst the disease was threatening the whole metropolis. Medical visitors are to be discharged, and sanitary inspectors to be reduced in number, the pumps are again to be opened, and dirt, and foulness, and all uncleanness are allowed to disport themselves, and produce the usual brood of "providential" diseases, as small-pox, typhus, and the like, against which there is none found to declaim. But we warn our "dirty" friends against relying on the present lull. We ask them to consider the consequences if the Thames should become as poisonous as the River Lea. What if the water supplied to the West end of London should become as impure as it was in 1848 and 1849, when Lambeth was nearly decimated by its impurity? What if some of the pumps still open in the streets should be worked by Death, as it was in Broad-street in 1854? We must not halloo before we are out of the wood. It becomes us to speak with bated breath in the austere presence of the Destroyer, who may only have stayed his hand for the moment to test our sincerity in the work of removing all obstructions to his speedy flight. However grand the work of assisting and comforting those who are afflicted, it is much grander to save those who have not yet been subject to the disease. Is it too late for the wealthy West to send aid to the poverty-stricken East? They want inspectors, they want medical visitors, they want lay visitors, they want earnest public-spirited men with the "Sanitary Act of 1866" in their hands, who will not rest satisfied till the last vestige of a "NUISANCE," as defined by law, shall be driven from the whole district. It is no use mincing matters. This is what *must* be done, or Cholera, or some other zymotic demon, will be constantly demanding its holocausts of victims as the penalty of neglecting the laws of health. It may still be (and God in His Providence grant it!) that this fourth visitation of cholera may be made a greater blessing than the

other three. The first, in 1832, resulted in our first faint attempts at sanitary legislation; the second quickened us into greater activity; the third left us with the conviction that we had done very little towards sanitary legislation; whilst this fourth must produce the conviction, that unless more is done than has ever been contemplated before, this generation will not be held guiltless of its country's blood.

Mortality of Towns in Great Britain in July.—The following is the return of deaths per 1000 of the population annually, as indicated by the return of deaths for the month of July, 1866:—

1.	Liverpool	44 per 1000
2.	Leeds	33 „
3.	Manchester	32 „
4.	London	30 „
5.	Salford	27 „
6.	Sheffield	26 „
7.	Newcastle-upon-Tyne	26 „
8.	Glasgow	26 „
9.	Edinburgh	23 „
10.	Bristol	22 „
11.	Hull	21 „
12.	Dublin	18 „
13.	Birmingham	17 „

This list demands some remarks. First, although the month ending July 28 found London in the midst of an epidemic of cholera, its death-rate is positively lower than that of Liverpool, Leeds, and Manchester; so that London is really a more secure place to live in, even when an epidemic of cholera is raging. Second, it shows that the greatest calamity that can befal one town is but the normal condition of many others. The calamity that has placed London nearly at the top of the list in point of mortality is cholera. Whilst, for the first six months in the year, London was lowest on the list, her time has come to suffer. We shall speak of cholera in another place; but there is no doubt that if the mortality of London at this moment claims the sympathies of the inquirer, there has not been a month since the beginning of the year that this might not have been claimed by the chronic high death-rate of such cities as Liverpool, Manchester, Leeds, Sheffield, and Salford. As we know what is the mortality of London in the first three weeks of August, we may state that its highest rate was on August 4th, when it reached 45 in the 1000, when Liverpool was 53; and that on the 11th of August it was 39 in the 1000. On the 18th of August it was 31 in the 1000.

Cholera Investigations.—It is announced in the *Lancet*, that Mr. Simon is preparing to carry out for the Privy Council an investigation concerning the present outbreak of cholera. The arrangements are still incomplete; but the following appointments have been made. Treatment Committee: Dr. Wilks, Dr. Martin, Dr. Bristowe, and Dr. Hughlings Jackson. Pathological Committee: Dr. Thudichum (che-

mical pathology); Dr. Burdon Sanderson (contagion experiments); other members not yet appointed. Water-stand Conditions: Mr. Glaisher. In addition, it is known that the medical inspectors of the Privy Council—Dr. Seaton, Dr. Buchanan, and Dr. Hunter, together with Mr. Rawlinson—have been making investigations concerning the outbreak in East London. For these important services, Mr. Simon has received the munificent grant of 500*l*. The Commissioners who investigated the cattle plague, and had some thousands placed at their disposal, complained that they were stinted. Our Government has, apparently, arrived at the conclusion, that the life of a human being is not worth as much as that of a cow! Yet if they studied the price of cattle and men in the Southern States of America, when men were sold there, they will find that to work on a land decidedly less productive than our own, that men were sold at ten times the price of cows. To be sure, men in this country are not saleable animals, but they are valuable tax-paying animals, and, if rightly managed, will produce more a head than black men. White men, in fact, are more productive on the earth's surface than black men, and are worth more. Surely, then, it would be wise to spend a little more about discovering the cause and the means of preventing cholera. Perhaps our statesmen will one day discover that two men are better than one, and that Malthus was not quite right when he said that the tendency of population to increase was greater than the tendency of the means of subsistence to increase.

Purification of the Thames.—Those who are anxious about the condition of the Thames—as what noodle in London is not?—will be glad to know that an Act of Parliament was passed during the session of 1866, for the purpose of purifying the Thames. It provides most absolutely that no sewage is to be poured into the Thames between Cricklade and Staines under a penalty of 1000*l*., and 50*l*. for each day's continuance. The Conservators to whom the Upper Thames is entrusted, and who are to be the same as the present Conservators of the Lower Thames, with five additional members, are to have the surface of the river effectually scavenged in order to remove all putrefying substances. Then, too, the question of funds is satisfactorily settled by a provision that the five metropolitan water companies are to pay 1000*l*. a year each to the Conservators. These are the chief enactments, and the Act must be regarded by all sanitary reformers as a step in the right direction.

Post-mortems at Coroners' Inquests.—The *Lancet* makes the following remarks on this subject:—The Middlesex magistrates who object to the expense of post-mortem examinations in cases on which coroners' inquiries are held, will probably be startled by the following statement of facts in the report of the Registrar-General for 1864: "4478 deaths took place in which the causes are 'not specified,' or 'ill-defined;' besides 3321 sudden deaths in which the causes were investigated, often vainly, by coroners' inquests." It further appears that of those deaths for which causes are assigned, a very large proportion (seventeen per cent. in 1858) are "uncertified" by any medical

attendant; although, according to Dr. Farr, "the medical attendance of the population is better in England than it is in any other State of Europe." It is impossible to believe that, if post-mortem examinations had been made in all cases in which the cause of death was uncertain, such a large number of unsatisfactory verdicts would have been returned. It is a false and dangerous economy to restrict the performance of after-death examinations to cases in which there are strong or clear grounds of suspicion that the death has not been natural. The Medical Witnesses Act, if properly carried out, would remove this scandal from the Coroner's Court. The inquest, if it is to be of any value, should in all cases determine the actual cause of death; and when it fails to do so it is not only unsatisfactory, but a useless, and, it may be, a mischievous inquiry. The fact of so large a number of deaths being "uncertified," points to the vast amount of illegal practice which is carried on in this country, not only by quacks and impostors, but by druggists, and calls loudly for a remedy.

Composition and Quality of the Metropolitan Waters, July, 1866. — The following are the returns of the Metropolitan Association of Medical Officers of Health:

Names of Water Companies.	Total Solid Matter per Gallon.	Hardness.	
		Before Boiling.	After Boiling.
Thames Water Companies.	Grains.	Degrees.	Degrees.
Grand Junction	17.49	13.0	2.5
West Middlesex	16.77	12.5	2.0
Southwark and Vauxhall.....	17.10	13.0	3.5
Chelsea	16.60	13.0	2.5
Lambeth	18.39	13.0	2.5
Other Companies.			
Kent	27.86	18.0	8.5
New River	17.16	13.0	3.0
East London.....	18.16	13.5	3.5

H. Letheby, M.B.

The analysis of the metropolitan waters during the month of July shows that in every case there is less than the average proportion of saline and organic matters, and the reduction of the latter, which is the most important constituent of potable water, is most marked in the waters derived from other sources than the River Thames; for while the amount of organic impurity in the latter has ranged from 0.49 to 0.76 of a grain per gallon, that of the former had been from 0.2 to 0.4 per gallon; indeed, the quantity of organic matter in the Kent water has fallen from an average of 0.2 of a grain to 0.02; that of the New River from 0.46 to 0.2; and that of the East London from 0.53 to 0.4. These reductions in the quantity of organic matter are chiefly due to the care with which the processes of filtration are conducted;

and if these analytical results are compared with those of a few years ago, the improvement is still more remarkable. It is very probable, however, that the most perfect processes of purification, so far as they can be used at the works of the water companies, will never be sufficient to ensure such a purity of water as the complete removal of those subtle agents of disease, which even the most refined appliances of the chemist have failed to discover. It may, therefore, well be that all discoverable traces of organic matter may be removed from water, and yet it may still contain enough of the minute germs of disease to manifest its morbific action wherever it is used. Experience, indeed, teaches us that it is not the quantity of organic matter in water so much as its quality which determines its dangerous properties; and, if it be true, as modern pathological science has almost demonstrated, that the real agent of such diseases as infectious fevers, cholera, the rinderpest, and other allied zymotic maladies, are living germs, and not a gas or vapour, or dead organic miasm, it must rest with the physiologist rather than with the chemist to decide on the means which are best suited for their destruction; and it is more than probable that the chemist would be putting forward very dangerous propositions if, by relying on his science alone, he ventured to dogmatise on so difficult a subject. That which has been abundantly proved in respect of small-pox and some other infectious diseases is very applicable to the present inquiry, in so far as it relates to the more than possible existence of choleraic germs in the water we drink. The agents of those diseases are unquestionably living germs capable of remaining dormant for an uncertain, but nevertheless not indefinite period, and then springing into activity and multiplying themselves without limit directly they find the conditions necessary for their active development. But whether these germs are susceptible of oxydation, like common dead organic matter passing through its final stages of decay, is more than chemical science alone can determine. The analogies in physiology are against such a supposition, and they warn us not to receive it even as a pos-.ible fact. That which we do know, however, is that these germs are destroyed by the temperature of boiling water; that they are killed by all caustic substances, as chloride of zinc, chloride of iron, &c.; and that they cannot resist the action of certain agents, as sulphurous acid and its salts, carbonic acid, which act on them after the manner of specific poisons. We must, therefore, look to these agents rather than to processes of oxydation for reliable prophylactics; and in the case before us the only agent on which we can confidently rely is heat, for if the infected water be boiled, the choleraic germs will be rendered innocuous. That the destruction of decaying organic matter in water is of the greatest importance there can be no doubt, for experience has proved that it also is productive of disease. It is, moreover, certain that organic matters of this description are rapidly oxydized by permanganate of potash, and by filtration through animal charcoal, and charcoal mixed with certain compounds of iron, but it is more than doubtful, even if it were practicable, whether such processes of purification should be used by the water companies at the sources of supply,

seeing how many causes of pollution exist between those sources and the consumer. Besides which, it must not be forgotten that only a very small part of the water delivered by the company is used for primary domestic purposes, the great bulk of it being employed for flushing closets, drains, and sewers, for watering streets, and for various manufacturing operations. It would, therefore, manifestly be an unnecessarily wasteful application of a tedious and expensive process, to do that at the works which can be so easily, so surely, and so much more economically done at the point of consumption. But, after all, the most important consideration at the present time is the means of obtaining a constant water supply, so that the prolific sources of contamination and of real danger to the community, the filthy butts and cisterns, may be entirely abolished. The very first step towards the attainment of this object must be made by the public themselves; for it is idle to expect a constant supply while there is the present imperfect condition of almost every household service. If, indeed, such a supply were at once given to us, it would assuredly fail, for all the water of the Welsh hills would be insufficient to maintain it. The daily supply of water to London is at the rate of about 30 gallons per head, whereas experience has proved in many instances that with a well-regulated constant service it need not exceed 20 gallons a head. As a matter of economy, therefore, as well as of public health, it is high time the consumer should make preparation for such a supply, in the way that the Act of Parliament directs, and then there would be no difficulty in applying processes of purification at every point where the water is used for domestic purposes. At the present juncture it is advisable that all water stored in butts or cisterns should be boiled before it is drunk, and, where it is practicable, it should be previously filtered through animal charcoal, or charcoal associated with proper compounds of iron; and failing this, it may be treated with a little of Condy's solution of permanganate of potash, until it retains a very pale but decided tint of rose red. In all cases, however, it should be boiled.

A Coroner's Arithmetic.—The *Pall Mall Gazette*, of August 22, says: "Dr. Lankester is an energetic and valuable public officer, but he can hardly be congratulated on his management of figures. The defence which he has just made of his very startling theory as to the number of child-murderesses in London, only brings out more clearly the fallacy of his calculations. He held eighty inquests on children found dead in one year, and he then assumes that there are no doubt eighty more murdered and never found. This is, however, pure hypothesis; and Dr. Lankester might as reasonably assume that there are two or three times as many, or half as many again, for one guess is as good as another. Then he assumes that there are just as many child murders in the other two coroners' districts in London; which is a guess also. Then again he says that the average age of child-murderesses is twenty, and that the average life of women who have lived to be twenty is sixty, giving forty years of additional life for the child-murderess to live unknown in the

midst of her non-homicidal fellow-creatures. But where does Dr. Lankester find that the average life of the girls who at twenty have formed the connexions which lead to child-killing is sixty years? We should be surprised if it approached that period. It is impossible not to think that the life of nearly all such women must be surrounded with those very conditions which hasten on premature death. Still more extraordinary is his assumption that women who kill one child kill only one. When the crime has been once committed, it is highly probable that it will be repeated under renewed temptations. Of the eighty slaughtered infants who came before his notice, how many does Dr. Lankester suppose to be the only one of a family of brothers and sisters not doomed to die? And how is the average age of the mothers ascertained when, in a large number of instances, the mother is not known? Doubtless too it is the youngest mothers who are chiefly found out, the older being more skilful in the concealment of crime. On the whole, the calculation breaks down at every step, and whatever be the real frequency of the crime, it never can be ascertained by these haphazard guesses, which serve only a sensational end, and terrify people into imagining that the evil is too gigantic to be arrested." This is one of those paragraphs got up for the purpose of effect. The editor of the *Pall Mall Gazette* ought to have seen, however, that the report of Dr. Lankester's observations as recorded in the newspapers, was a calculation of probabilities. Such calculations have been always admitted in politico-economical science, and are a legitimate method of arriving at conclusions with regard to facts which cannot be observed. The writer of the above paragraph must know that there is no improbability at all in the calculations made by Dr. Lankester, and they have not been made for the purpose of producing a sensation at all, but for the purpose of showing, to those who are indifferent about the question of infanticide, that there is reason to believe that its extent is much greater than is generally supposed. It is very unfair of political writers, who deal almost entirely with assumptions, to attack an argument like that by Dr. Lankester, as if his conclusions were valueless, from the impossibility of ascertaining the facts; *à fortiori*, their opinions, without anything like a scientific basis, must be utterly futile.

London Water Supply.—It is stated that surveys are in progress with a view of applying to Parliament in the ensuing session for an Act to enable existing companies, or some of them, to procure a better supply. It is proposed to divert and utilise all the sewage of the towns which lie on the Severn above Tewkesbury, in accordance with the principles laid down in the Report of the Rivers Commission, 1865, and to take the supply from that river just above Tewkesbury, and to convey it thence to large reservoirs at a distance of nine miles, and at a sufficient elevation to allow the supply to pass from these reservoirs to London, delivering the water there at the requisite height to afford a constant supply at high pressure to every portion of the metropolis. It is said that the flow of water for such a long and continuous length, and without receiving any contamination in its passage, will so oxydise the organic matter held in suspension, that it will tend greatly to purify

and soften the water. The estimate of the probable cost of carrying out this undertaking, as made by the engineer, Mr. Hamilton Fulton, is 3,000,000*l.*, whereas it is estimated that the cost of Mr. Bateman's Welsh project would cost nearly 9,000,000*l.* Should it upon further investigation be found impracticable to divert the sewage satisfactorily from the towns above referred to, it is considered that an excellent and pure supply for London might be obtained from the sources of the River Wye, which drain the districts in the vicinity of Plynlymon range, where the annual rainfall is equal to 70 inches deep. Mr. Fulton estimates the additional cost of this plan at 2,500,000*l.*, or a total of 5,500,000*l.*

The Jews and Cholera.—It is a subject of remark that the Jewish inhabitants of the East-end have escaped almost unscathed during the outbreak. In Petticoat-lane and its immediate neighbourhood only three or four cases of cholera have taken place, and the cases of diarrhœa have hardly exceeded those of an ordinary summer. A similar exception was observed in 1849, when the Hebrew community only lost about 1 in 2000 as compared with 6 in 1000 of the general population of Whitechapel, and 29 in 1000 of the Christians of Rotherhithe. Then, as now, the immunity was ascribed to certain observances and habits inculcated by the Jewish faith. For example, the houses of all Jews undergo a thorough cleansing once a year, and every room is lime-whited at least as often; more than one family never occupy the same rooms (two or three or more families sometimes occupy a single room among the lower orders of the surrounding population); considerable care is taken with respect to the quality of the food used, tainted provisions being proscribed, and all flesh meat being inspected by a religious officer before being consumed; and, finally, the poorer members of the community are liberally cared for through the benevolence of the rich, applications for workhouse relief not being allowed.

An Anticholeraic Beverage.—Dr. Waller Lewis, in describing the precautions against cholera adopted at the General Post Office, says: "The men employed in sorting letters and newspapers suffer much from thirst, especially in the hot weather, and consequently drink much water while engaged in their duties. Although the Post Office is supplied with the New River Company's water, and this is all filtered through silicated charcoal in the various offices, much diarrhœa was, nevertheless, the result of this practice. For some time past the officers of all classes are supplied from the medical department with a most agreeable drink, which not only assuages the thirst, but has, moreover, strong antiseptic and anti-diarrhœal properties. It is called orangeade, and it is thus composed: Take of dilute sulphuric acid, concentrated infusion of orange peel, each 12 drachms; syrup of orange peel, five fluid ounces. This quantity is added to two imperial gallons of water. A large wine-glassful is taken for a draught, mixed with more or less water, according to taste. The officers drink this with pleasure. It is being consumed in large quantities daily, and I am convinced it will be the means of warding off a great deal of sickness."

PROCEEDINGS OF SOCIETIES.

The Approaching Congress at Manchester.

Thanks to the exertions of the Local Committee, and of the three secretaries, Messrs. Maclure, Philips, and Steinthal, the Manchester Congress is likely to be one of the largest and most brilliant that the Social Science Association has yet held. Manchester has the immense advantage of being able to house all the departments under one roof. If the Assize Court had been specially built for the purposes of such a Congress, it could hardly have been more suitable. The central hall, on the ground floor, is to be the reception-room; and provided as it is already with post-office, telegraph-office, and refreshment-rooms, it needs scarcely any special fittings. From this hall there is direct communication with the criminal, the sheriff, and the civil courts, all on the same floor, in which the departments of education, health, economy, and trade, are to be respectively located. The council, the various committees, and the secretaries have all apartments close at hand. The three sections of the jurisprudence department have their chambers allotted to them on the upper floor. On the evening of Thursday, October 4, the Assize Court will be lighted for the first time, on occasion of a grand conversazione, given by the Manchester Committee to all the members and associates. A second conversazione will be given in the same place on the evening of the following Monday. The President's address will be delivered on the evening of Wednesday, October 3, in the Free Trade Hall; the departmental addresses in the Civil Court, on successive mornings before the business of the sections begins.

The recent change of ministry compelled Lord Stanley to resign the presidency for the year, which he had previously accepted. The vacant office was then offered to and undertaken by the Earl of Shaftesbury. Lord Brougham, as President of Council, will also attend the Congress and deliver an address. The presidents of the jurisprudence, education, health, and economy and trade departments, are respectively the Hon. George Denman, M.P., the Right Hon. H. Austin Bruce, M.P., Dr. Farr, and Sir J. Kay Shuttleworth. Papers and addresses are expected from Mr. Anthony Trollope and Mr. Ernest Gambart on international copyright, from Mr. Hare on improved methods of voting, from Mr. Commissioner Hill on life sentences, from the Rev. W. J. Kennedy on the further extension of education among the poor, from Sir J. Kay Shuttleworth on the governing bodies of endowed schools, from Dr. Angus Smith on the prevention of smoke, from Dr. Stevenson Macadam on the pollution of rivers, from Mr. David Dudley Field, of New York, on codification, from Mr. J. F. Bateman on water supply, &c.

Society for Promoting the Employment of Women.

This society has just issued its annual report, of which the following is an abstract. The society has now completed its seventh year, and its work has been gradually advancing. Branch societies have been established in Edinburgh and Dublin, and similar societies have been started in Berlin and Hamburgh. During the year ending June, 1866, the number of visits to the office, 19, Langham-place, from applicants, averages from eight to nine a day. The fresh names entered during the year amount to 391. Of these, 53 have obtained permanent, 36 temporary employment through the agency of the society; 133 still remain unemployed. The ages of applicants vary from 14 to 60, and in a few instances ladies even above 60 have applied for employment. Taking the names of 100 applicants as they stand on the register, it is found that 29 are above 40 years of age, 27 are between 30 and 40, 33 between 20 and 30, and 11 under 20.

The occupations in which women have obtained employment by the aid of the society, are artistic work; secretaryships, photography, nursing, telegraph clerks, hairdressing, plate and watch engraving, and law copying.

The report concludes by reference to the evils arising amongst women from the want of early training in some business or profession. Grown-up women, who have had no education other than that given in girls' schools, cannot take up a trade or profession at any moment, when the necessity comes. Their best chance is that of obtaining situations as teachers, nurses, matrons, or companions, and these occupations are often closed to them, either by their own unfitness, or by the simple fact that the number of applicants for such positions largely exceeds the demand. During the last three months, 18 women have entered their names, desiring situations as companions and lady-housekeepers; during the same period only two applications have been made by employers. It is evidently, therefore, of the utmost importance that girls should receive such specific training in early life as will enable them to maintain themselves with dignity in their own rank, in case of being thrown upon their own resources in middle age. It is worthy of special note, that the most distressing and hopeless cases which come under the cognizance of the society, are those of married women. Some have become widows, others have been deserted by their husbands, or have shared their misfortunes. These women have often a family of helpless children to support, and sometimes also a husband, incapacitated by sickness of body or mind from maintaining himself.

In opening new fields of labour, there are two principal hindrances on the side of the employer and the employed respectively. There is on the one hand the reluctance of masters to make innovations on established custom. Sometimes there is opposition to be encountered from workmen; sometimes it is feared that customers may dislike the change; sometimes there is distrust of the capability of women for any work which they have not already shown themselves able to do

well, a distrust betraying itself in the frequent suggestion, that "some other business," *i.e.* anything rather than the one proposed, would be a more suitable occupation. On the other hand, there is the improvidence of parents, which makes them unwilling to incur the expense of apprenticeship for their daughters, and in some cases the real difficulty, or impossibility, of paying the sum required as a premium. The difficulties on all sides can only be removed by the gradual action of public opinion, and it is as contributing towards the formation of a healthy public opinion on this question, that a Society for Promoting the Employment of Women is eminently useful. The mere existence of such an institution is a standing protest, the weight of which will be more and more felt, as by an increase of the means at the society's disposal, the sphere of its activity is extended, and its direct influence is brought to bear on a larger number of individuals.

As bearing upon the work of the society, though not directly accomplished through its agency, the committee have pleasure in calling attention to the fact, that the medical profession may now be regarded as open to women. In the autumn of last year Miss Garrett, of 20, Upper Berkeley-street, Portman-square, received the diploma of the Society of Apothecaries, constituting a legal qualification for general medical practice, and she has been appointed general medical attendant in a dispensary, shortly to be opened, for women and children.

The committee also regard with much satisfaction the extension to girls of the Cambridge and Durham local examinations. The influence of these examinations in encouraging accuracy and increased attention to the more solid branches of instruction, especially arithmetic, is already beginning to be felt. It is hoped, that as public attention becomes more awakened to the importance of female education, certain old foundations, which appear to have been designed for both sexes, but from the benefits of which girls have been gradually excluded, will be restored to their original purpose. Charitable funds available for the apprenticeship of girls might be most usefully employed in assisting widows, who have daughters to provide for, and no means of giving them a fair start in life.

Epidemilogical Society.—Report of the Council of the Cholera Hospitals.

In June, 1865, cholera broke out with great violence in Egypt. During the summer and autumn of that year the epidemic extended to many parts of the continent of Europe, touched lightly on our own shores, and appeared in the western hemisphere. Diminishing in activity as the winter advanced, it still lingered throughout the cold season in several places, and, early in the present year, it showed signs of renewed energy in Europe, and seemed likely again to become migratory. The Council, having regard to the measures of safety which it would be best to adopt should this country suffer, drew up and distributed among the members of the society, and others whose opinion it was desirable to ascertain, the following circular:

"London, March, 1866.

"SIR,—In the event of an outbreak of cholera in this country, the first practical question for the consideration of the profession will be, how to make adequate provision for the reception and treatment of the poor when stricken with the disease; and what kind of accommodation should be preferred, as most calculated for the benefit of the patients, and least likely to endanger the public health.

"The public will naturally look for some expression of opinion on so important a subject to those who, from study and experience of the disease, may be in a position to give the results of their practical knowledge.

"The President and Council invite your attention to the three following questions, and would feel much obliged if you will favour them, at your earliest convenience, with answers thereto:

"1. Can persons suffering from cholera be admitted into the ordinary wards of general hospitals or infirmaries without danger to the health of other patients?

"2. Can cholera patients be admitted into special wards set apart for the disease, in general hospitals and infirmaries, without undue risk of the extension of the malady to the other inmates of the institution and their ordinary attendants?

"3. Do you deem it necessary that special hospitals should be provided for the reception of persons attacked with cholera? and that such persons should not, on any conditions, be admitted into general hospitals or infirmaries?"

Replies (*see* Appendix) have been received to these queries from many of the most eminent members of the profession, among whom may be mentioned the Presidents of the Royal College of Physicians and of the General Medical Council of Education, the Directors-General of the Army and Navy Medical Departments, and the Physician to the Secretary of State for India in Council.

The Council tender their thanks for the courteous attention which has been given to their circular, and they submit the following observations, based upon the answers with which they have been favoured:

I. There appears to be a general concurrence of opinion, expressed or implied, that under certain circumstances and conditions, cholera is liable to be communicated from person to person—the liability being usually in proportion to the crowding of many persons together, the defective ventilation of apartments, and the neglect of thorough cleanliness in respect of person or abode.

In addition to the possible risk of the disease extending in this manner, the alarming character of the symptoms, and the necessity for unremitting attendance upon the sufferers, are calculated to produce terror in the minds of spectators, and thus strongly predispose them to be attacked.

For these reasons, the opinion is very generally held that it is unadvisable that cholera patients should be admitted into wards which are occupied by other sick inmates.

The experience, however, of some of the metropolitan hospitals in

past epidemics shows that, due attention being paid to sanitary arrangements, cholera patients may be received, in limited numbers, into the general wards without injurious results either to the other sick or to the ordinary attendants.

No instances have been referred to, in the evidence before the Council, in the opposite direction, viz., of the disease having spread to the other inmates of a ward in a well-regulated hospital.

II. With respect to the second query, the experience of the metropolitan physicians who have favoured the Council with replies appears to be that, with proper precautions, cholera patients may be admitted into separate wards in general hospitals or infirmaries without undue risk of the extension of the malady to the other inmates of the institution.

This opinion is shared by all the respondents who have had experience of the disease in tropical countries.

It would have been very desirable to have been informed of the results on this point in some of the military and naval hospitals in this country and also abroad.

The precautions above referred to are these:

(*a.*) Ample space to each patient; not less than 1500 or 2000 cubic feet.

(*b.*) Thorough ventilation of the wards at all times, both night and day.

(*c.*) Immediate disinfection and removal of the excreta, soiled linen, &c.

(*d.*) A separate staff of nurses.

III. The reply to the third query depends much on the opinion formed in respect of the two former questions. If cholera patients are not admissible into general hospitals or infirmaries under any conditions, it is obvious that some extemporised and special arrangements must be provided for the reception of the destitute when attacked.

But even when they are admitted, there are various circumstances in which it will be advisable or necessary that special hospitals should be provided; *e.g.:*

(*a.*) When general hospitals or infirmaries are at a distance from the seat of the actual or apprehended outbreak.

(*b.*) When there is a want of accommodation, with due regard to the ordinary patients, or when the accommodation is unsuitable or objectionable.

In selecting the site of special hospitals, the following points require to be attended to:

(*a.*) Nearness, if possible, to the chief seat or seats of the outbreak. It is important that cholera patients should not have to be carried far. There is always great risk in moving patients in, or verging to, the state of collapse.

(*b.*) Airiness, and freedom from sources of atmospheric pollution.

(*c.*) A dry and elevated situation is to be preferred to a low and damp one.

Amid the crowded districts of a large town, it appears preferable

that several small and suitable hospitals, or "houses of recovery," should, if possible, be established in different localities, rather than one or two large hospitals for the reception of a great number of cholera patients.

The remark that the presence of an experienced staff of medical officers in general hospitals, and the existence of more complete appliances of every sort in them than are likely to be provided in extemporised special hospitals for the treatment of cholera patients, are marked advantages in favour of the former, deserves consideration.

The general conclusions of the Council are these:

1. That it is, on the whole, unadvisable that cholera patients be admitted into the ordinary wards of general hospitals or infirmaries.

2. That cholera patients can be safely admitted into special wards in general hospitals, due precautions being taken; and therefore that it is desirable, as an important means of providing accommodation for the destitute when attacked, that the authorities of these institutions grant this valuable benefit to the public.

3. That it will often be necessary that special hospitals be provided in aid, or in lieu, of general hospitals and infirmaries.

In addition to these arrangements for the accommodation of the poor when attacked with cholera, the Council would recommend that places of refuge be provided for the temporary sojourn of some of the unattacked inmates of unwholesome dwellings and localities where the disease has appeared.

Association of Medical Officers of Health.

On Thursday, the 16th of August, a meeting of this Association was held to confer on the present epidemic of cholera. The chair was taken by the president, Dr. Druitt, who, in his introductory remarks, said they had met for the purpose, amongst other things, of ascertaining from each other whether the local authorities had, or had not, been remiss in dealing with the outbreak. He was glad to see Dr. Sarvis, medical officer of health of Bethnal-green, present, and he should feel obliged if he would address the members on the subject.

Dr. Sarvis regretted to say that the Orders in Council found his vestry "entirely unprepared," and, so far from their being inclined to carry out his suggestions as health officer, they, in fact, opposed him. Three dispensaries with a medical visitor to each and some assistance were established, and chloride of lime and other disinfectants supplied to them. When he said that, he had said nearly all. There was scarcely any house-to-house inspection—in fact, there were three sanitary inspectors appointed for a district numbering upwards of 115,000 inhabitants. He could really form no opinion as to the outbreak of cholera in his district, and could not trace its source. He was inclined to lean to the opinion that it was in some sort attributable to the River Lea, but still that river was not as impure as it had been represented to be. There was one other point to which he wished to call attention. The local authorities of Bethnal-green were not the only ones to blame, for the adjoining parishes were quite as bad. The

parish of Shoreditch, for instance, was worse than Bethnal-green, and if the medical officer were asked his candid opinion, there could be no doubt he would acknowledge it.

Dr. Lankester said there was reason to believe the present outbreak, like the previous ones of 1848 and 1854, was in very great measure attributable to the water supply. It was therefore with extreme regret he had seen that day urchins drinking water from a pump near St. Martin's Church, which was no doubt impure. He felt very strongly that all these pumps should be closed. He felt greatly pained by the statement made by Dr. Sarvis as to the remissness of the vestry of Bethnal-green in dealing with the outbreak, and thought it time that the Association should apply to the Privy Council in the matter. He begged to move the following resolution: "The Association of Medical Officers of Health desire to represent to the Privy Council that there are districts in London, including some where cholera is now raging, where the provisions of their Lordships' order under the Diseases Prevention Act are being inefficiently carried out, and the Association submits that inquiry by the Privy Council is required as to the efficiency of the precautions that are being taken against cholera, and as to the organisation available in each district for dealing with an epidemic of cholera. Among other points to which the Association consider their Lordships' inquiry should be directed, they would refer particularly to the sufficiency of sanitary inspection, of house-to-house visitation, and the means that have been adopted for better cleansing and for supplying water to the districts."

Dr. Buchanan seconded the motion, and said that an independent inquiry, instituted by the Privy Council, would do a great deal of good.

Dr. Aldis referred to the noisome air that is contained in some of the London churches, and particularly referred to the crypt of Spitalfields Church, which has been poisoned for years. In his own district (St. George, Hanover-square) there were vaults in a church which sometime ago were deluged with sewage and caused an outbreak of diphtheria.

Dr. Sarvis said he was not satisfied with the state of the water-butts in his district, and there were many other things that required urgent attention. A larger water supply—in fact, a constant water supply—was needed in the poorer districts. At present, the water is only on for five or seven minutes, and that was quite insufficient even for the ordinary wants of the people.

Dr. Gibbon said strong measures should be adopted for causing these filthy water-butts to be cleaned, and in a great number of cases they ought to be burned and fresh cisterns substituted.

The Chairman said the question of water supply might form the subject of a distinct resolution. The one before them then was Dr. Lankester's, asking for an inquiry into the conduct of several London local boards in dealing with cholera. Did the members consider it advisable to pass it or not?

After a lengthened discussion the resolution was put to the vote

and lost, and upwards of half-a-dozen medical officers of health then stated that their vestries were doing all they could to arrest the progress of the epidemic. One or two of them thought that some of the ratepayers had good grounds for complaining that such high salaries should be paid to "medical visitors" for inspection, when laymen could be got, at a much lower salary, that would do the work quite as efficiently as medical men.

Mr. Lord, medical officer of health for Hampstead, emphatically condemned the giving of two guineas a day to medical visitors as a great waste of public money.

Dr. Gibbon then moved the following resolution: "That a communication be addressed to the local authorities and cholera aid committees where the disease is prevailing, urging them to have all water-butts either effectually cleansed and disinfected or else replaced by new ones; meanwhile that the authorities provide stand-pipes to supply water for domestic use direct from the mains."

British Medical Association.

This Association held its thirty-fourth annual meeting at Chester, from the 7th to the 10th of August, and was presided over by Dr. Waters, of Chester. A large number of members were present. The addresses on medicine and surgery were delivered by Professor Bennett, of Edinburgh, and Mr. Bowman, of London. The *British Medical Journal* makes the following remarks on the meeting:

"The meeting will long be memorable in the annals of the Association. As far as success went, there was every reason for congratulation. The meeting was well attended. There was enough and to spare of intellectual food of the highest nutritive quality; the welcome of the members resident in Chester to their brethren who came from a distance was most cordial; the Report of the Council showed the Association to be in a flourishing condition in its pecuniary matters, and to have achieved an important share of the work which it had undertaken for the professional and public good. The past of the Association during the year, in fact, gave every reason for hope in the future. But the meeting was held under circumstances peculiar and painful, which, in part, can never again occur, but which must through many years leave their traces at our annual gatherings. For the first time in its history, the Association was not cheered by the presence and animated by the voice of its founder. That excellent man, to whom the prosperity of the Association was as his own life, and who, almost with his latest articulate words, sent his greetings to those whom he never hoped to meet again, had been but the day before the meeting committed to the grave. Most natural and fitting it was, then, that the Council should with one mind determine to suspend the ordinary course of business in opening the meeting, in order that the retiring president and Mr. Carden, as the faithful friend and medical attendant of Sir Charles Hastings, might submit for adoption by the members a form of words expressive of their feelings on the occasion; which motion, having been supported by Dr. Richardson in a few earnest words, was,

by the unanimous vote of the members, placed on the records of the Association.

"Nor was this vote of regret at the death of Sir Charles Hastings the only means taken of showing respect to his memory. Later in the proceedings, a resolution was brought forward and unanimously adopted, that a sum of money should be raised by voluntary subscription among the members of the Association, the interest whereof should be applied to the augmentation in value of the Hastings medal. This medal, it is proposed, is now to be open to the profession in all countries, and is to be accompanied with a sum of money, which, we hope, will be worthy of the Association and of his memory whose name and effigy the medal bears. The Association, too, also adopted the unprecedented, but on this occasion justifiable, course of suspending its laws for the purpose of electing as an honorary member Mr. George W. Hastings, the son of Sir Charles. The laws of the Association limit the honorary membership to members of the medical profession, and therefore, under the circumstances, Mr. Hastings, as a barrister, would be excluded; but his important services as Secretary of the Social Science Association, the valuable aid which for several years he gave the Association in the matter of medical reform, and, perhaps, above all these, his near relationship to the revered founder of the Association, formed ample grounds for the course which the meeting followed."

Harveian Society.

Thursday, November 2, 1865. Dr. J. B. Langmore, President, in the Chair.

Dr. Tilbury Fox read a paper On the Cholera in Egypt. The substance of this paper appeared in the first number of our Journal. The debate which followed the reading of Dr. Fox's paper was one of great interest, and although it took place some time since, it has lost none of its interest, and perhaps the opinions expressed are of more value, as they were given "at a time when there was no panic to bias the judgment."* At the conclusion of the paper,

Dr. Fuller observed that few of those present were so well qualified as the author of the paper to speak of the origin of the present epidemic of cholera, but for his part he could not believe that the arrival of a ship was necessary for the outbreak of epidemic cholera in any locality. Either the incubation of the disease must be very long, or it might originate through local agency, and migrate independently of transportation. Thus, he had been informed by captains of vessels, that weeks after their ships had been at sea, the cholera had broken out suddenly, and had ceased almost as suddenly. After the siege of Bomersund our fleet was perfectly healthy, and no cases of cholera occurred until the second or third day afterwards, when a stinking cloud came over the fleet, and thereupon the disease broke out in all the ships, and within a few hours many men had died of cholera. Again, with regard

* Dr. Drysdale, in preface to a pamphlet "On Cholera, its Nature and Treatment."

to the outbreak near Golden-square, which Dr. Snow and others had attributed to the contamination of the Broad-street pump-water by the secretions of cholera patients, he must say that he could not subscribe to this theory of the causation of the disease. Its appearance was astonishingly rapid; scarcely a case of cholera existed in the district until about six o'clock on the evening of the outbreak, and within the space of twenty-four hours not less than sixty or seventy persons had perished, and scores of others had been attacked with the disease. No drinking of the pump-water could account for such a rapid—nay, almost momentary—outbreak of this epidemic; indeed, he did not give credence to the belief that evacuations from the intestines of cholera patients had anything to do with the outbreak; for the pump-water was not suspected until after the disease had begun to subside in that locality, and it had been drunk by the inhabitants not only during the progress of the disease, but before the epidemic showed itself, and also during its subsidence, where the water must have been excessively charged with the cholera secretion. Dr. Fuller went so far as to question whether the rice-water secretions would produce the disease in any person, and expressed a wish that the experiment could be fairly tried. He would not be afraid to drink a pint of them. In fact, he, for his part, did not believe much in the contagious nature of cholera. Again, some persons spoke of a contagion in the air; but the disease not unfrequently progresses from place to place against the wind, and that under circumstances which preclude the idea of the transmission by human agency. To avoid this difficulty, the theory of infusorial animalcules had been used; but glycerine traps had failed to discover these animalcules. After all sorts of theory, he felt inclined to attribute the disease to some telluric influence—some agency capable, as electricity would be, of being transmitted through land and through water—acting on the organic nervous system, and so affecting it that all secretion ceases. He did not believe in any distinction between cholera and cholerine; the rice stools and rice-water vomiting, the cramps, the collapse, and the suspension of the urinary and other secretions, were present in the one as in the other, and the cases differed only in their intensity and consequent fatality. He could not understand how bilious diarrhœa could be confounded with cholera, and he thought the word English cholera was a wrong one, since the disease was either cholera or diarrhœa, and could not be both. The term "sporadic" might be applied to cases occurring when the disease was not epidemic, but essentially these cases are identical with cases of epidemic cholera, and are characterised by the same symptoms. Dr. Fuller regarded the practice referred to by the writer, of giving strychnine in quarter-grain doses, or extract of nux vomica almost *ad libitum*, as erroneous in principle, and generally mischievous. So long as the state of collapse continued, it was indeed but of small importance what drug was used, or what quantity of it was given, as no absorption goes on during that stage of the disease; but if the unfortunate patient who had been drugged with large quantities of strychnine or opium, survived this, the function of the stomach would return, absorption would

commence, and he would then inevitably perish by the drugs of the doctor. His own experience of remedies in the collapse was, that they were all in vain, and he would prefer, himself, if he were in this state, to have only an occasional emetic, iced water to drink, rice to suck, a mustard bath, mustard poultices to the epigastrium, and friction with cajeput oil or some stimulating embrocation to the extremities. Hot-air baths had been praised; but the patient came out of them as cold as when he entered, and, as far as he had seen, they were useless. During the early stages he thought much good might be done by dilute sulphuric acid in full doses, calomel and ice, cold water for drink, and mustard hot baths, and mustard poultices to the epigastrium. The application of ice to the spine, which had been much spoken of lately, is not new. In India, cold douches to the back have often been tried, and proved very serviceable in allaying cramp, but not in curing the disease. In some cases warm douches proved most grateful to the patient. Neither, however, were of much value in a curative point of view.

Dr. D. Menzies thought that some of the symptoms of cholera might be compared to the action of an acrid mineral poison, such as tartarized antimony. Considering that the coats of the stomach were in an irritable condition, he combined the decoction of bark with almond emulsion in the treatment of the first case coming under his care in 1831-2, when he was employed by Government to watch the progress of cholera. The wife of a fisherman, aged forty-five, residing in an island in the North Sea, at the mouth of the Elbe, had caught the disease from her husband, who had brought it from the mainland, from Hamburg, although the man had only suffered from looseness of the bowels on the voyage. Dr. Menzies found the woman in collapse apparently beyond hope: no pulse at the wrist, with jactitation as if in a case of loss of blood; rice-water stool; she had great desire for cold drinks; surface of the body cold and covered with a clammy sweat; voice gone. Dr. Menzies had recourse to the bark mixture above described, in doses of half an ounce at intervals. The patient gradually recovered her power of retaining food on the stomach. A pill was then given, calomel gr. v; pulv. op. gr. j; aromatic conf. gr. ij, and mustard sinapisms were applied to the epigastrium, with hot-water bottles to the extremities, and frictions, with diffusible stimuli. As the pulse, however, still continued to be absent, he opened a vein in the arm, but scarcely any blood would flow; he repeated the operation in the opposite extremity, and, by placing both arms in warm water, he was enabled to get away five ounces of dark thick blood: about fifteen minutes after this the pulse was felt beating in both wrists. Under gentle mercurial laxatives she came round, and completely recovered. In other cases occurring in the island, he had found the same treatment satisfactory. He had generally observed, when in the tropics, during seasons of sickness, that thunderstorms were less frequent than usual; the atmosphere was oppressive. He thought that the poison of cholera acted upon the economy through the pneumogastric nerve, and the blood, becoming surcharged with carbon, and wanting its serous part, failed to nourish the brain, &c.; hence the symptoms of collapse.

Asiatic cholera was essentially a disease of hot climates and endemic in India, and was developed by the conditions of the atmosphere before mentioned. Much depended on the direction of the wind; for he had generally observed that the disease was most prevalent when the wind was in the east. In 1855, when the disease was at Shorncliffe, having been imported thither by soldiers of the German Legion from Hamburg, he had noticed that the wind was in the east when the disease was imported. Although a non-contagionist, he thought the specific poison was undoubtedly frequently conveyed through individuals arriving from infected places, and that attendants on cholera patients were not unfrequently attacked. Hence, strict quarantine regulations should be enforced on vessels from infected places. Those attacked also should be perfectly isolated, and a *cordon sanitaire* should be kept up. Troops should be removed from the infected district; great attention should be paid to ventilation and cleanliness, and water supply. The treatment of cholera which he had found most successful in India was the administration of small portions of iced water at short intervals. This often relieved the vomiting and thirst. Also a pill containing from five to ten grains of calomel with gr. j of opium, and gr. ij of aromatic confection, was given with effervescing draughts and diffusible stimuli; sinapisms to the epigastrium, and hot bottles to the feet, with friction to the extremities. When reaction came on, mild mercurial laxatives, nourishing food, &c. Care was taken to keep the patient in the recumbent position, and the bed-pan was used. He (Dr. Menzies) laid great stress upon the quantity of iced water that should be administered. It should *not* be given *ad libitum*, but in quantities of a tablespoonful at a time. This refreshed and gave tone to the stomach. He found this treatment efficacious, whether made use of in the earlier or later stages of the disease. In some cases there were no premonitory symptoms; in others there was premonitory diarrhœa. Referring to Dr. Chapman's views, as to ice to the spine being of service, he thought these were somewhat analogous to his own views, and he thought well of the practice, since its object evidently was to stimulate the nervous centres, to relieve congestion, and impart tone to the nervous system.

Mr. Sedgwick could not fully agree with the author's opinion respecting the transportation of cholera. He had himself had extensive opportunities of seeing the disease in India, and of hearing the opinions of Indian medical officers on the subject, and, whilst he agreed with the author of the paper, that India might be referred to as specially connected with the source of the disease, yet it was impossible to account for its diffusion by the contagion theory alone, or to admit that the late epidemic in Arabia, Egypt, Syria, and elsewhere, could be satisfactorily explained in the manner suggested by Dr. Fox. The contagion theory of cholera was, to say the least, doubtful; and as an argument against it, Mr. Sedgwick mentioned a case in which four members of a family residing in a model lodging-house, consisting of eighteen sets of rooms, died from cholera excited by eating roast mutton in an almost putrid state. There were seventeen other families in the same building at the time, all of whom remained free from the

disease. The rooms occupied by the cholera patients were thoroughly cleansed with chloride of lime, fresh whitewashed, and repapered, and left unoccupied for four or five weeks; but, notwithstanding these precautions, two members of the next family who came to live in them, were attacked by cholera in a mild form, and recovered. The disease showed no tendency to spread, although there was but one staircase common to all the inmates, and no quarantine regulations were observed. Mr. Sedgwick agreed with Dr. Fuller that no internal administration of drugs was of use in the advance stage of collapse. He thought that the hypodermic method of treatment might, to some extent, be available, and ought to be fully tried in the expected epidemic of cholera. Ice-bags along the spine would no doubt often succeed in producing reaction, but they might also do much harm, by inducing the secondary fever, which had been far more destructive than collapse in the late epidemics of the disease. Mr. Sedgwick referred to the absence of secondary fever in the first epidemic in India, and the almost universal treatment of cholera by bleeding at that period. Although there was now a prejudice against bleeding, yet it had been found extensively useful in this disease. He had often bled patients in the early stage of collapse with good results, the most urgent symptoms being relieved by it; and if this practice were revived, it would probably serve to lessen the tendency to excessive reaction, which had been the chief cause of death in the last two epidemics of cholera.

Dr. Broadbent expressed his astonishment at the opinions advanced by Dr. Fuller, and especially with the grounds on which he had arrived at them. There was the fact, first, that in all the epidemics of cholera it had travelled from India westward in the track of trade; and, against this, which so clearly pointed to human intercourse as the means of its transmission, he adduced a number of individual cases of its apparently unaccountable appearances, as at sea, its simultaneous development in certain districts of London, &c. Equally remarkable exceptions could be brought forward with respect to disease of the most markedly contagious character, such as small-pox or typhus. In his opinion, when all possible allowance had been made for local causes and atmospheric influences, there was in the history of cholera epidemics something which could only be accounted for on the supposition of a specific poison transported by human agency. Dr. Fox had done great service by tracing cholera from India to Mecca in the present epidemic. The pilgrims assembled there were fit victims for any disease; but the condition, exhaustion, overcrowding, and filth, however much they might predispose to cholera, were not those which produced this disease in its endemic habitat, India. The impression on the organic system of nerves, spoken of by Dr. Fuller, so far from being peculiar to cholera, was an effect common to all the specific blood-poisons. As to terrestrial emanations, which had been suggested as a possible cause, no kind of analogy supported this idea. It was, in fact, confessing that we knew nothing about the cause, and it was better to say so in so many words.

Dr. C. Drysdale remarked that, notwithstanding the cogent argu-

ments used by Dr. Fuller, he could not agree to the view that cholera was not contagious, although he would be only too glad to think so. Dr. Baly's analysis and the whole literature of the subject seemed to show that the only supposition fit to account for all the phenomena was that it was contagious, and that atmospheric or telluric or hygienic causes did not usually originate the disease in Europe, but merely assisted its progress. He believed with Dr. Fox that it originated in India, and was carried by individuals to Europe. As to Dr. Snow's theory, he believed the truth to be that bad water of any kind much predisposed to diarrhœa and cholera; and certainly if cholera dejections were present, this must be reckoned the most dangerous of drinks. He did hope that Dr. Fuller would never make the experiment of drinking a portion of the rice-water stools; for, however noble and heroic such-like experiments were, they were too costly when lives were perilled by them. No one could fail to admire the heroism of M. Girard, the student at Montpellier, who placed fur from a dying cholera patient's tongue on his own tongue to encourage the attendants. The action was noble only because it was supremely dangerous. How did the non-contagionists account for the appearance of the late outbreak of cholera treading the very path that travellers most frequented; viz., from India to Alexandria, from Alexandria to Malta and Marseilles; thence by rail to Paris, and by boat to Italy? Then again appearing at Southampton on the arrival of a vessel there, and again in America on the arrival of an emigrant vessel. Dr. Simpson in Edinburgh, and Dr. Boeck in Christiania, had given the clearest proofs of the contagious character of cholera. In London and Paris, and large towns, it was very difficult to trace the origin of contagious diseases. No doubt it was desirable to prevent our people being terrified by the idea of contagion; but truth was always more advantageous for the mass, on the whole, than error. He would then, with Dr. Fox, urge upon European governments the importance of, if possible, by quarantine operations and isolation of those attacked, restraining the ravages of what was now the most fearful scourge of the human race; and if the rinderpest could be, as it had been, so well kept out of south Europe by the German government, he did not despair of lessening the ravages of cholera. With respect to the hygienic means of fortifying the constitution by good food, &c., he agreed with Dr. Fox, that as long as poverty was so common as it still was in all civilised countries of Europe, little could be done in warding off epidemics. When the causes of poverty should be calmly considered and understood, instead of ignorantly and systematically ignored by those who ought, from their education, to know better, some hopes might be entertained that epidemics would in the end be less fatal. Attention to the size of families and emigration was of more importance than even ventilation, &c.; since the very poor could never secure either good food, ventilation, or any other comfort. Every effort, however, should be made to secure good drainage, ventilation, and food for the poor in the coming epidemic. With regard to treatment, the multiplicity of drugs used showed the difficulty of attaining great success with any, at particular

stages of the epidemic. In cholera, as in other diseases, the rational treatment was always the best. If the motions were brown, as in summer diarrhœa, a purge was sometimes of service. When serous diarrhœa had fairly set in, M. Velpeau's advice—viz., to use five or six drops of laudanum every two hours, on sugar—was good; and whatever remedy was used when the doctor was absent should be as simple as possible. Strychnine, belladonna, &c., were, he believed, contra-indicated and very dangerous, even in collapse, and warm applications to the extremities were the great remedies in collapse, with frictions over the body. Rest in bed and the use of milk or soup for diet was indicated. Diluents were indicated, from the extreme thirst and loss of fluids from the system; stimulants were frequently indicated. Dry cholera, or cases without diarrhœa, were most uncommon.

Dr. Greenhow said that he should confine his observations to the point suggested by the last speaker (Dr. Drysdale)—viz., the contagiousness of cholera. He had carefully examined all the evidence adduced by various writers in support of the contagious doctrine, and had had peculiar opportunities for personal observation during the last two epidemics of 1849 and 1854, and yet no real instance of the spread of cholera by contagion had ever come under his notice. Many such had, indeed, been reported to him; but on a careful examination into all the facts, every one of them had broken down. The strongest evidence in support of the doctrine of contagion was the general fact, that each severe visitation of cholera during this century had appeared to travel in a westward direction until it arrived in this country; but even this was, in his opinion, rendered inconclusive by various other facts which he should proceed to mention. The truth was that cholera was not new to this country in the present century, for it had prevailed here, although, as it would seem, in London exclusively, during the latter half of the seventeenth century, and had caused a larger mortality in proportion to the population of the metropolis than any of the visitations in our own time. The disease was so well described by Willis and Morton, that no one practically conversant with cholera in the present day can doubt the identity of the two diseases. Then, again, for several years before the advent of cholera to this country in 1831, there had been an increase in the mortality from diseases of a profluvial character in London, and no less than forty-eight deaths were recorded in the bills of mortality under the name of cholera in 1831, although the disease was not supposed to reach the metropolis until February, 1832. Also during the summer of 1831 several medical men of reputation had published several cases of cholera that occurred in various parts of England some months before the earliest cases in Sunderland, where the importation of the disease into this country is supposed to have taken place in the month of October of that year. Moreover, there had not only been, annually, since that time, sporadic cases, which would certainly have been set down as true cholera, had an epidemic been prevailing at the time; but there had been several isolated outbreaks which no one had attempted to attribute to importation from abroad. Neither did an in-

vestigation into the modern views as to the mode in which cholera is believed to spread by contagion, afford any substantial evidence in support of the doctrine. These might all be said to be founded on the theory that the dejections of cholera patients were the exciting cause of the disease. According to Dr. Snow, the swallowing of the supposed poison excites the disease just as the syphilitic virus excites syphilis. On the other hand, Dr. Thiersch considers that the dejections must have first undergone putrefaction to render them poisonous, and Dr. Pettenkofer that the dejections must act as a ferment in a porous soil already charged with night-soil, in order to the production of the cholera miasm. These several views are, however, only theories, which, although they tally in several respects with the local history of cholera, have never been brought to demonstration in particular cases; and all the evidence adduced in support of them amounts to the fact, that cholera has prevailed especially where the people respired an atmosphere vitiated by the products of the decomposition of human night-soil, or drank water fouled by the like impurities. This fact was, undoubtedly, true; but it was not true, according to his (Dr. G.'s) experience or investigations, that the presence was required in such impurities of the dejections of cholera patients, either in the recent or fermented state. Cholera being then, in his opinion, largely due to local causes, it might very properly be asked—Why does not cholera prevail every year? To this he would reply—because at least another factor is needed. During and before every epidemic of cholera in the present century, a certain meteorological condition has prevailed. The barometer has been high, the atmosphere remarkably still, the temperature, especially the night temperature, above the average, and the rainfall insufficient. It was also said that there had been a deficiency of electric movement. It was quite conceivable that in such atmospheric conditions both a different form of decomposition might take place, giving rise to unusual products, and that these latter would be retained longer in the vicinity of human dwellings. He could also conceive it possible that some other exceptional telluric influences might exist at such times. However this might be, cholera had come in 1831, in spite of a rigid quarantine; and he did think it most desirable that the attention of the medical profession, and of the public generally, should be directed rather to the removal of the local conditions, which appeared under every existing theory to be necessary to the spread of the disease, than to any attempts to prevent its importation by means of restrictions on commerce, which would certainly prove both futile and vexatious.

Mr. Curgenven was a believer in the contagious nature of cholera. We find, he said, the cholera following the course of trade. It visits Cairo, Constantinople, Ancona, instead of going to inland towns. Then it comes to Malta, then Marseilles, then Paris. From Malta to Gibraltar, and thence to Southampton, by the ship *Nianza*, on which vessel there were four deaths; yet she was only in quarantine one day. Some cases had appeared in London: one in a mantua-maker who had come from Paris, and who died in ten days. Winter had come on and

checked the disease, but it would reappear again in spring. Impure air and water will not cause the disease, but predispose those who are exposed to the contagion to take it. Certain epidemics will appear when a soil is prepared for them. Typhoid fever or cholera will ravage one side of a street with bad drains and leave the other untouched. In 1853, at the Royal Free Hospital, there was one nurse who evidently caught the disease. He had warned her after this against a second attack; but she met a cholera patient at the gate, took the disease, and succumbed. The poison germs of cholera are in the air in epidemic times, requiring only to meet a fit soil. He had witnessed three epidemics of cholera —1849, 1853, and that in the Crimea in 1855. In the last two he had trusted mainly to calomel, and would not hesitate to say that a great many lives had been saved by its use. In 1853 he was resident medical officer at the Royal Free Hospital. There the mode of administering calomel was to give a scruple or half a scruple dose, with the same quantity of powdered ginger in treacle. This in nearly every case stopped the sickness and purging at once; if it did not, the dose was repeated; and four hours after the arrest of the purging a draught was administered, consisting of an ounce of castor-oil and an ounce of tincture of rhubarb. The effect of this draught was to bring away a copious evacuation, black, and of the consistence of treacle. Recovery then followed, except in a very few cases, which succumbed to the secondary fever or uræmia. The calomel was not absorbed; but he believed that its powerful alterative action was exercised on the mucous surface of the stomach and intestines, being there converted into the insoluble black oxide: it is all removed from the body by the purgative that follows. Dr. Johnson's treatment by castor-oil was tried in four cases, and they all died; when it was considered unwise to proceed further, as so much success had attended the calomel treatment. Almost every case that was not in a state of collapse when brought to the hospital recovered. He followed the same course of treatment in the Crimea, and did not lose a single case. Opium and all drugs dependent on absorption were useless. Stimulants were rarely of any use. In the collapsed stage the treatment by salines in large doses, and frequently administered, he considered had saved a greater number of lives than any other plan. Diarrhœa was most successfully treated in 1853 by sulphuric acid and opium, and by chalk mixture with opium and astringents. In the Crimea sulphuric acid failed, when the compound cinnamon powder with tincture of catechu was found most useful.

Dr. Hart Vinen thought that the progress of cholera pointed to its contagiousness. He had seen several cases that strengthened this belief. For example, a German baker died of cholera. The woman who nursed him died of the disease, and several persons who came to see him died of it; the next door neighbours also died. In the case of the cholera outbreak of 1854, he had seen many cases where no alvine dejections could account for the disease. An old lady in St. John's Wood, who kept a school, was one of the first to die in that locality, and the curate also died. As to treatment, he had found

calomel in large doses and astringents the best. The ordinary astringent of acetate of lead and opium was very useful.

Mr. Owen had listened with great interest to Dr. Greenhow's address. Dr. Greenhow had shown that contagion was not necessary to the production of the disease. He (Mr. Owen) was, however, a contagionist, for he thought that that side had the best of the argument. It was hard to prove a negative; and all that the non-contagionists could say was, that the disease *might* arise without contagion. The disease in Epping lately was traced to a person who had been in Southampton, where cholera was at the time. As to the case of the student who swallowed the rice-stools, not being infected, there was no proof that another person would not be destroyed by it: his system might be proof against the poison at the time. It was well that there was a difference of opinion on the subject, as this caused the public to be less apprehensive than if all were contagionists.

Mr. Adams had been connected with St. Thomas's Hospital in 1848-9, when there were cholera wards there. Mr. Grainger's views were those of the non-contagiousness of the disease, and were then accepted as true. During the epidemic only one nurse died, and none of the students died of the disease. Mr. Adams made all the post-mortem examinations, and he could only say he did not think the disease directly contagious to individuals, although the fact of its travelling from India seemed hard to get over. No one at that time had any fear of contagion. Denudation of epithelium of the intestines occurred in all the cases where collapse was complete. As to treatment, at that time all treatment seemed alike. No one had confidence in any drugs. A pailful of water at the bedside for drink seemed the most successful. But, whilst the epidemic lasted, no one treatment availed more than another.

The President said he had seen a great deal of cholera in 1832 in Whitechapel. He then found most advantage from administering small doses of calomel with camphor every hour, and diluents *ad libitum*; also the application of warmth and friction, especially to the extremities. He still remained a believer in contagion, after all he had heard from Drs. Fuller and Greenhow. Mr. Sedgwick's case, he thought, was one of contagion, as the poison was evidently in the room six weeks after the other cases had left. Cholera travels from East to West, that is, follows the track of commerce, and slowly, for it never traversed the ocean at a rate exceeding that of ships, whereas influenza traversed space quickly.

Dr. Mushet avowed himself a non-contagionist. Elevation above the sea explained the immunity of some districts over others which lay by the sea and in the course of trade. In 1854, at the Marylebone Infirmary, all kinds of treatment were used. Castor-oil treatment was always fatal. Sulphuric acid seemed the best. There was a night nurse in the cholera ward who lived in it constantly, and was not attacked. Those who were attacked seemed to him to have been so because they were near the privies: in the surgical wards a man and nurse died who were near a foul privy. The undertakers were not

affected, and they lived entirely among the dead. Another woman died of it, but she was a drunkard. He thought there was no sufficient evidence for the theory of contagion.

Dr. Greenhow remarked that in 1854 every one was a non-contagionist, and now it seemed likely to be the reverse. Then stinks were the supposed cause; now he could see that medical opinion had turned round towards contagion. As to quarantine, it must be remembered that in 1831 quarantine existed and to no effect. He did not say that the disease was non-contagious; but that he had not himself seen evidence sufficient to convince him of the fact.

Dr. Tilbury Fox, in reply, stated that time did not admit a full reply. He would only merely say that he had recently received information from the East corroborative of the origin of the present epidemic in India. Before the pilgrims arrived at Mecca, it prevailed at Aden and Mokullah. Cholera, it was strange, was unknown in Australia. Contagion was now differently defined from formerly. Thus, a ship, a pilgrim, an animal, or a moist cloud from an infected city, might carry contagion. In times of cholera it was very important to use water free from all impurities. The charcoal filter of Atkins, of Fleet-street, was the best and simplest purifier of water he was acquainted with.

Metropolitan Free Drinking Fountains Association.

The seventh annual meeting of this Association was held at St. James's Hall, Piccadilly. The chair was occupied by Lord Grosvenor, M.P., and among those on the platform were the Hon. Dudley F. Fortescue, M.P., the Hon. A. Kinnaird, M.P., the Hon. F. Byng, Dr. Aldis, medical officer of health of St. George's, Hanover-square, and Dr. Jeaffreson of the London Free Hospital, &c. Letters were read from Lord Ebury, Mr. Hanbury, M.P., and Mr. C. Buxton, M.P., apologizing for their unavoidable absence. The annual statement of the committee, after alluding to the importance of giving to the poor a full and free supply of water, stated that the efforts of the association had been appreciated by the public, as many as 8000 people having been known to drink at a single fountain in one day. More than 30,000 were estimated to drink daily in the summer at 140 fountains already erected in London, and many of these the committee believed to be working men, who would otherwise be compelled to resort to the public-houses to quench their thirst. All the fountains which are under the care of the association are kept fully supplied with water, and qualified workmen are employed to visit and repair them; the condition of every fountain is thus regularly reported at the office at least twice a week, and any damage is immediately repaired. Throughout the winter the committee have been increasing the number and efficiency of the fountains; eight new ones have been erected, and many private ones which had become dry and dilapidated have been repaired and taken charge of by the association. The labours of the association, however, have resulted in the expenditure of all the funds placed at its disposal, and as there are still entire parishes, densely populated, without a single

fountain, it had been compelled to appeal to the public for assistance. The report stated also that one lady, who had requested that her name should be kept secret, had sent 1000*l.* to the treasurer, and that an Indian prince had furnished a similar sum to be expended upon a fountain in Hyde-park. The association required 1000*l.* a year to keep its present number of fountains in repair. It had established about ninety-nine in different parts of London, ten of which had been erected during the past twelve months; and the total number of fountains under the superintendence of the association, including those erected by private individuals, numbered about 140.

The Hon. A. Kinnaird, in moving the adoption of the report, stated that Lord Grosvenor had subscribed 50*l.* to the association.

The resolution was seconded by Dr. Jeaffreson, who referred at some length to the inadequate manner in which the poor were supplied with water. He had found that wherever typhus existed, the insufficiency or impurity of the water supplied to the neighbourhood was a prominent sign. In a small court, for instance, near the "Elephant and Castle," where twelve houses were occupied by about three times the number of families, and where typhus was generally rife, the supply of water lasted only about a quarter of an hour or twenty minutes daily during six days in the week, and the pipe through which it was sent was exceedingly small. On Sundays, when the poor might reasonably wish to be more cleanly and more comfortable than on the other days in the week, the supply was entirely cut off. In order to obtain any water at all, the people were compelled to place whatever utensils they possessed on the ground under the pipe, while in the immediate vicinity was the sewage of the houses. He hoped that the poor would ultimately be supplied with water in their own homes, and he regretted that Parliament had thought fit to refuse an inquiry into the subject when a motion proposing such an inquiry had been brought forward.

CORRESPONDENCE.

THE TREATMENT OF CHOLERAIC DIARRHŒA AND INFANTILE DIARRHŒA.

To the Editor of the JOURNAL OF SOCIAL SCIENCE.

SIR,—The conflicting opinions which are published daily and weekly, as to the respective merits of the "eliminative" and "repressive" treatment of the above-named disorder, render it incumbent upon all who can speak from positive experience of the results of either plan, to throw the weight of their convictions into the scale on that side which their judgment commends.

That being so, I feel it my duty to state the opinion which I hold upon the subject; and I am persuaded that both science and common sense are with me, when I pronounce in favour of that which is spoken of as the "repressive," but which I prefer to name the "conservative" method of treatment.

When diarrhœa is induced by the presence of unsuitable and indigestible food, the readiest mode of cure is to get rid of the exciting cause of irritation, and this is effected by the aid of emetics or purgatives, according to the indications of the case; but when diarrhœa appears in the character of a "crisis," or determinating issue of some other disorder—such as fever—or as a premonitory symptom of cholera, another course of treatment suggests itself.

The rationale of the matter seems to be this: diarrhœa being the result of an effort of nature to get rid of the morbid elements with which the system is surcharged, undue interference should be avoided, either in accelerating or checking the symptom. It must be remembered that emetics and cathartics have always a depressing influence; especially so at a time when an exhaustive process is being carried on, which involves an effort to throw off the poison from the blood by means of the diarrhœa.

This effort of nature requires, however, to be watched and kept in check, not by chalk mixtures, or other medicinal astringents, but simply by judicious dietetic treatment. Among some of the most efficacious articles of diet for that purpose I would mention the following: good beef tea with rice boiled in it; gruel containing brandy; port wine mulled, and ground rice well boiled; cinnamon may be added with advantage to any food or drink to which the flavour is suitable.

The value of these articles of diet is this, they combine the *astringent* with the *nutritive* properties—a most essential consideration in the treatment of diarrhœa; for it seems rational to suppose the best method by which the poison can be driven out, is to supply the blood, through the stomach, with new and wholesome elements.

We can understand that this treatment is eminently "conservative," inasmuch as it economises the life powers; and the system is thus enabled to throw off the disease without the amount of sacrifice to health and strength which the eliminative process demands of it.

I cannot close these remarks without some reference to "infantile diarrhœa," a disorder which, apart from any choleraic visitation, is always most destructive of infant life during the summer months. The Registrar General's return for one week (at the commencement of August) showed that "of 349 deaths from diarrhœa, 309 were those of children under 5 years of age, including 244 infants." One of the saddest experiences of the sanitary philanthropist is the fact that this excessive infant mortality is in a great degree preventible; but that reflection has its hopeful side also. If we can but apply the right means of prevention, the mortality from this cause may be reduced, and, what is more, a large amount of sickness—which is always associated with, and over and above, a high death-rate—may be avoided.

If poverty were the chief cause of this fatality amongst children of the labouring population, the remedy would not be so simple; but it appears to me that ignorance is a far more prolific source of the majority of infant deaths than any other which it is possible to suggest. If we can disseminate information respecting the simple laws of health, a great step will be gained towards remedying the evil. On the subject of infant-feeding, poor parents are lamentably ignorant; and injudicious food is poison to the infant constitution, predisposing it to various ailments, which, if they do not

always prove fatal, sow the seeds of ill health and infirmity for a lifetime. Considering how simple and inexpensive is the proper food for infants, there is really no reason why every child in the land should not be WELL FED, in the true sense of that term. With regard to the special subject in hand, viz. "diarrhœa and its dietetic treatment," a most valuable food would be found in ground rice: if well boiled, and a little good milk added, it would form a very nourishing diet, at infinitely less cost than the food which is daily consumed of a most injurious kind by the children of the poor.

As a charitable investment, I would recommend the laying in of stores of rice by boards of guardians, and by benevolent individuals who may delight in acts of private charity.

I believe that a hundred-weight of rice can be obtained at the cost of ten shillings; and, considering that a pound of the ground article would be sufficient to feed daily a dozen children, a very simple calculation will suffice to prove the "economy" of the plan, in more senses than one.

I am, Sir, yours obediently,

July, 1866. M. A. B.

HEIGHT OF WATER IN WELLS.

To the Editor of the JOURNAL OF SOCIAL SCIENCE.

DEAR SIR,—I am desirous of having periodically the height of water in wells, for the purpose of tracing the variation of height with the rainfall and with epidemic diseases, particularly cholera and typhoid fever.

Professor Pettenkofer, of Munich, asserts, "that neither of these diseases will spread excepting under certain conditions of water level in each subsoil."

If there be any well in your neighbourhood under your control, I should feel glad, during the continuance of cholera, if you would favour me with the height weekly, and after its cessation, monthly. Or if there be any in your neighbourhood not under your control, if you would mention my wish to the proprietor of the well, and ask him so to favour me, I should feel greatly obliged. I should like to know the whole depth of the well in the first instance, and the distance to the surface of the water periodically afterwards; and if those particulars are known for past periods, or any period is known when the water in the well was remarkably low or high, I should be glad to be favoured with such information.

I am, dear Sir, faithfully yours,

Blackheath, August 4, 1866. JAMES GLAISHER.

THE "BLUE MIST."

To the Editor of the JOURNAL OF SOCIAL SCIENCE.

SIR,—As you have drawn some attention lately to the appearance of a "blue mist" at the present time, particularly noticed by Mr. Glaisher, and connected by him with the cholera outbreak, will you allow me to make a remark bearing upon the nature of this mist, which I think may prove to be of public interest? It was suggested by Mr. Glaisher that it would be desirable to make an examination of the "mist" by means of the microscope, and accordingly I used the following means for obtaining any particles which might be present in the air, in order to examine them. First, slips of glass were cleaned and exposed under trees where the blue mist was observable. Second, a pane of window glass was cleaned and exposed to the mist for ten days at Hampstead; the translucent film which had collected on it was removed with pure boiled water and a clean brush. Third, a pair of bellows, carefully cleaned, was made to blow the "mist" for half an hour through a small bottle of perfectly pure water. The sediment from the water and the slips of glass were *at once* examined, besides a few insect scales and dust grains. In all three cases a great abundance of minute granular aggregations was seen, the largest of the granules not exceeding the 6000th of an inch in diameter. The granules were highly refractive, and presented all the characters of fungoid growths, being similar to the spores of the yeast plant and other moulds. The abundance of these spherical granules, sometimes grouped in chains, was very noticeable.

In a paper read by Mr. Jabez Hogg to the Microscopical Society of London, I find

that during the cholera visitation of 1858, the Rev. Lord Godolphin Osborne obtained these fungus-spores from the neighbourhood of cesspools, gullyholes, &c., and termed them *aerozoa*. Mr. Hogg has himself observed them ever since that time in all places and at all seasons, and remarks that there is no doubt that at the end of hot weather and in the autumn-time they are most abundant.

There is no evidence whatever that the fungus-spores noticed in the "blue mist" are peculiar in their nature, or connected in any way with cholera. The only thing remarkable about them is their very great abundance, which, though by no means so great as to lead to the belief that they actually compose the mist, may perhaps account for its density and greyish or "light blue" colour. I may remind some of your readers that "blights," or dense mists carrying innumerable fungus-spores, are not uncommon local occurrences, resulting in the disease and destruction of many crops.

I am, Sir, your obedient servant,

Hampstead. E. RAY LANKESTER.

PROFESSOR ROLLESTON ON CHOLERA.

To the Editor of the SPECTATOR.

SIR,—There is one sentence in your last week's exposition of Pettenkofer's views as to cholera, which I do not feel sure that the Professor himself would agree to. It is this: "It comes, then, to this, that any town which will go to the expense of having all its streets and houses well scoured, and securing for its citizens a constant supply of pure drinking water, can thus secure for itself, according to Professor Pettenkofer's theory, perfect immunity from the attacks of cholera?" A town which has taken all these precautions may, I think, according to Pettenkofer, still be amenable to an attack of cholera; for if its subsoil is porous, it may still retain in its superficially placed strata much of the impurity with which the anti-sanitary arrangements of our forefathers saturated their surroundings. According to Pettenkofer, five conditions, two of which depend on personal and three on local causes, are necessary for the spread of cholera. The first personal condition is the presence in the place in which cholera is to spread of the particular and specific cholera poison, cell or ferment, which originates in the *rejectamenta* of choleraic patients, and also in the *excreta* of healthy persons who have come from choleraic districts. The second personal condition is the receptivity or susceptibility, often self-superinduced, of the person to be infected. The first local condition is a porosity and permeability to air and water of the subsoil. The second is the presence at a greater or less depth from the surface of this porous subsoil of what Pettenkofer calls *Grundwasser*—though he tells us that his opponents will not use his nomenclature—and what we call "springs," *and* also "*land*springs" or "subsoil water." This second local condition is specially deadly when the level of the "springs" or of the "landsprings," as the case may be, has just fallen unusually low, after having been previously unusually high. The third local condition, without which the diffusion of cholera is impossible, is the presence, more or less diffused, in a subsoil of the character specified, of those organic matters which modern sewage whirls away from our precincts, but which ancient slovenliness left to fester all around its houses in cesspits and middens. Now in this, as in many other cases, the sins of the fathers are visited upon the children, and soils may retain for almost indefinite periods the taint of organic impurities which were allowed to soak into them even generations ago. A greater greenness in the growing grass or corn enables us to recognise even now the graves at Culloden, and indeed the burial-places of yet older British warriors, who knew as little of the broadsword as they did of the bayonet. Now, it is possible that in extreme cases such as these, the greater exuberance of vegetation may depend upon other conditions than that of its finding putrefiable organic matter to feed upon in the soil; but it is impossible to escape from the evidence which goes to show that animal, and specially human life, may be seriously affected by the disturbance of organic matters which have lain in the earth undisturbed for very long periods. We have the excellent authority of Vicq d'Azyr for saying that an epidemic was caused in Auvergne by the opening of an old cemetery, and similar histories are not wanting in the records of our East Indian medicine. The facts that London churchyards help to destroy life by their exhalations, whilst vegetable life may remain dormant yet alive for ages when buried in the earth, may seem unlike enough to each other, but they are really alike, inasmuch as they both

show that the earth beneath and around our houses may harbour and preserve organic agents in a condition from which they may arise and prove potent for mischief for periods which are practically indefinite. Finally, Pettenkofer's own words are, "A considerable time, even many years, must pass before the organic matters in the soil are so changed and decomposed that the cholera germ can no longer develop itself when the other necessary conditions are present." The sewering of Vienna and Munich, he goes on to say, is a most desirable thing; but he advises us, in the contingency of the impending of a cholera epidemic, to put our trust in means which starve the cholera germ by destroying the alkalinity of the sewage. Let us, he might say, by all means avoid any further impregnation of the earth around our dwellings with sewage; but it would be as foolish for us to expect that by putting sanitary measures and sewage in force on the spur of the moment we can nullify the impurities which years of neglect have accumulated and infiltrated all around us, as it would be for a repentant drunkard to expect that his fluids and tissues would become instantaneously renovated on the instant of his taking the pledge to total abstinence. Much good may, it is true, be done even at the moment by abating local nuisances; but they can only be abated at the moment, they cannot be nullified; whereas the personal element of a specific poison can be nullified and destroyed in the *rejectamenta* by the employment of acidifying disinfectants. Sanitary measures and systems of the kind specified in your article may or may not prove, ultimately, to be omnipotent against epidemics; but if they are to have this power, they must have time allowed them to acquire it in. The best case may be injured by an overstatement; and I think it is an overstatement of the virtues of sanitarian reforms to say that towns perfectly sewered and supplied with perfectly pure water are perfectly safe against cholera. But the overstatement may become a just statement of the case when we add to it the qualifying clause, "if these arrangements have been at work for a sufficiently long time."

I take this opportunity of saying that Pettenkofer's views, of which, as expounded in his own "Zeitschrift für Biologie," a sketch appeared in the *Standard* of Monday, August 6, are now accessible to the reader of German in a shilling pamphlet, published at Munich, under the joint editorship of himself, of Dr. Griesinger, of Berlin, and of Dr. Wunderlich, of Leipsic, three names of very high rank and authority in German, and, indeed, in all medical literature.

There is little added in this pamphlet, and nothing that is contradictory to the views which are put out at much greater length in Pettenkofer's Memoirs in the "Zeitschrift für Biologie," but the following four or five points, specially insisted upon in the smaller publication, deserve notice at the present crisis.

In the pamphlet, which bears we may say the title "Cholera Regulations," special stress is laid on the importance of employing for the disinfection of sewage some one of the different metallic salts, and particularly for several economic as well as chemical reasons the sulphate of iron, which will keep up in it an acid, in preference to the chloride of lime, which possesses and produces an alkaline reaction. For actual experience has shown that a particular atmosphere is necessary for the life of the cholera germ, and this particular atmosphere is furnished by the alkaline exhalation of decomposing human sewage. The establishment of *Observirungs-spitals* for persons afflicted with premonitory diarrhœa is recommended in the pamphlet as well as in the papers published in the *Zeitschrift*. Four per cent. only of persons so affected and so removed to "Houses of Observation" were found to pass on into confirmed cholera —a result sufficiently confirmatory of the recommendation. But in these days, when English doctors and doctrines differ so widely as to treatment, it is important to say that the Germans, like most of our East Indian practitioners, recommend small doses of opium as the best medicine for precursory symptoms.

That it is now universally allowed that choleraic *excreta* are the source of the specific cholera germ may be seen from the literary fact that a dispute as to the first discoverer of the all-important fact, "a *Prioritäts streit*," as the Germans call it, has been raging for now more than ten years on the Continent. The safety which, by acting on the obvious corollary of this result and disinfecting their *excreta*, we can insure to ourselves, is as great as that which a complete (and impossible) quarantine would have secured, or as that which a non-porous, non-springy, non-contaminating subsoil does actually confer.

The language of the German Professors seems intended to convey the impression

that drinking water may, when it is impure, favour the spread of cholera rather by its general anti-sanitary powers than by becoming the vehicle for the specific cholera germ. But they do not positively declare themselves, at least in this pamphlet, to be opponents of Dr. Snow's explanation of such facts as those put on record by the Registrar-General in the papers of this day.

Of season and of temperature, as influencing the progress of cholera, our Professors say nothing. But it is obvious that according to their views the influence of heat and of cold, which latter we are now hoping for, can count but for little except indirectly. Heat promotes evaporation of moisture, and so will in many soils lower the level of the *Grundwasser*, and it favours certain decompositions which render the soil alkaline, whilst cold works in precisely the opposite direction. And so far, but no farther, our common opinion is correct. In chilly, and therefore by virtue and help of the Gulf Stream, rainy England, cholera and typhoid fever are summer and fine autumn diseases; but this seasonal distribution does not hold good in by any means all other countries, nor even in this always.

I am happy to be able to say that the system of disinfection so strongly recommended, and carried out with such gratifying results in Germany during the severe epidemic of last year, is being put into operation throughout this city, under the superintendence of Dr. Child, the Medical Inspector of our Local Board of Health. A somewhat similar system of disinfecting has been carried out and, I presume, is still being carried out in Bristol during the present month, and the cholera which broke out there at the beginning of this month seems, according to the Registrar-General's Report of this day, to have ceased there. It is very probable, though possibly not a matter of demonstration, that the attainment of this result has been due to the labours and energy of the two well-known medical advisers of Bristol, Drs. Budd and Davies. And it is well to say that both the theory and the practice of the former of those gentlemen have been laid before the public in a small pamphlet, a perusal of which, by showing the almost entire unison and harmony of the advice given by Dr. Budd in the west of England, and by Professor Pettenkofer in the south of Germany, ought to prompt the dullest and the most sluggish to follow their recommendations.

For as it seems to me, the system of disinfection as a means of prophylaxis against cholera has at once the strongest scientific and the strongest moral claims upon our attention at the present moment. As to its scientific claims, the theory upon which it is founded reconciles and explains much that was previously obscure, confusing, and contradictory in the otiology of the disease, and in the few cases in which it has as yet been found practicable either in Germany or England to put it to the test of actual experiment, the results which it was predicted would ensue upon its application have actually occurred. In a moral point of view it has even stronger claims upon our attention in a world in which and in a matter in which "probability is the very guide of life." At the present moment no other practicable means for prophylaxis on the large scale has even been hinted at.

The otiose scepticism which is content to deny and disbelieve overtly and genially enough, everything which it has never chosen to examine into, becomes at a crisis like the present simply a public offence.

There is a larger and less amusing class of men whose minds are just active enough to make them good at objections without making them good at anything else. On the present, as on most other occasions, such men content themselves with making suggestions in the helpful negative shape familiar to them, and they warm into sympathy with investigation only so far as they hope to see our present means for doing good superseded in the progress of discovery, and those who have availed themselves of such imperfect light as they could at the time obtain, discredited thus as clumsy bunglers. Such persons are more powerful just now than under ordinary circumstances for provoking anger; in a population which knows itself to be mortal, they are fortunately less powerful for producing mischief.

I am, Sir, your obedient servant,

Oxford, Wednesday, August 22, 1866. GEORGE ROLLESTON.

[We have taken the liberty of extracting this very important scientific and practical letter from the columns of the *Spectator*, and commend it to the thoughtful study of our readers.]

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